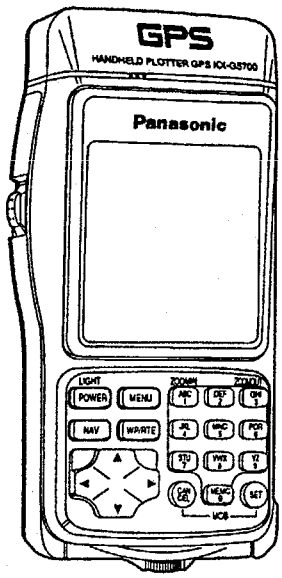
ORDER NO. KM49410902C3

Service Manual

HANDHELD PLOTTER GPS

and Technical Guide

KX-G5700X



■ SPECIFICATIONS

Main Unit

Receiving Method	5 Channel, Parallel Receiving (1575.42 MHz)
Receiving Sensitivity	-130 dBm
Position Accuracy	15 mRMS (GDOP≤6) Position accuracy may be degraded up to 328 feet 2D RMS under the control of the US Department of Defence.
Display Type	Liquid Crystal Display, LED Backlight, Illumination Keys.
Memory Back up	5 years (Internal Lithium Battery)
Ambient Temperature	14°F~122°F(-10°C~-50°C)
Power Supply	6 AA Manganese Batteries [Battery life: Approx. 60 minutes in Continuous Use, without using IC card at 68°F (20°C)] 6 AA Alkaline Batteries (Separate Sale) [Battery life: Approx. 300 minutes in Continuous Use, without using IC card at 68°F (20°C)]
Dimensions (Width×Depth×Height)	92×53×175mm (With Battery Pack, not including projecting parts)
Weight	Approx. 450g (Main Unit), Approx. 670g (With Battery Pack)

The figures of lasting time and battery life are in the case of "LED backlight is off" or without using IC Card.
Design and specifications are subject to change without notice.

Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians.
Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you mention the serial number, write down all 11 digits. The serial number may be found on the label affixed to the bottom of the unit.

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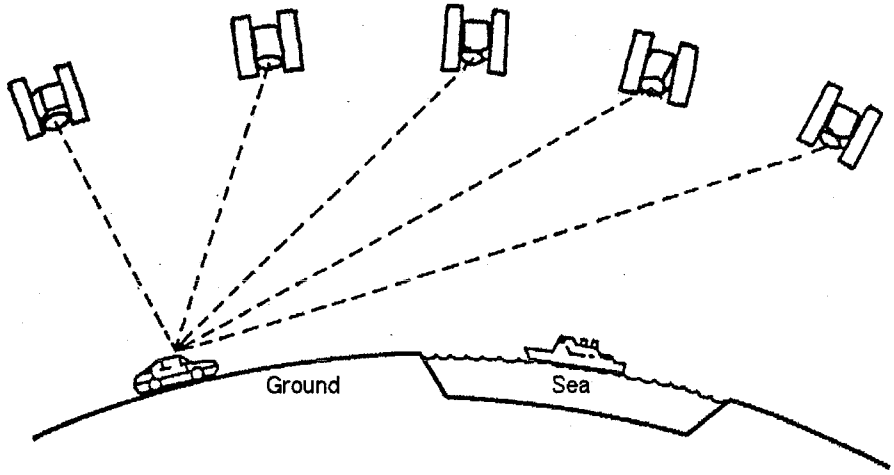
GPS TECHNOLOGY

GPS Satellites

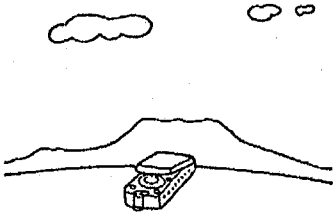
GPS satellites are orbiting the earth at an altitude of 20,000km (12,427 miles) by the U.S. Department of Defense.
GPS is the system that receivers on the ground, on the sea or in the air can receive signals from 3–4 satellites to calculate an accurate position (latitude, longitude, altitude).

When all the 24 satellites are launched and configurated on 6 orbits (each orbit has 4 satellites), this system will be fully implemented.
Measurement may not be done all the time, because enough satellites have not been orbiting yet and because GPS satellites are orbiting satellites. When 24 satellites are launched, measurement will be done anytime.
GPS signal will not be received if there is an object between the satellites and a receiving antenna because GPS signal has a similar quality to light.

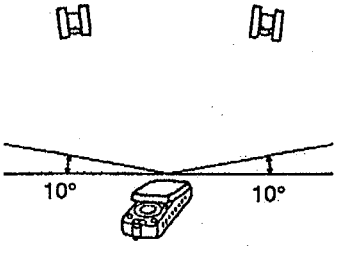


* GPS satellites are operated and controlled by the U.S. Department of Defense. Position Accuracy may be changed. Eighteen satellites have been operating since August of 1992.
- Depending on the configuration of the GPS satellites, the displayed data may not be the same as actual latitude, longitude and altitude. [Altitude may differ ± 0.1 M (150m).]

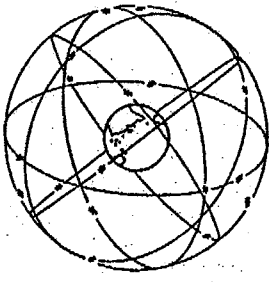
Measurement



A good place for measurement
An open-air place where you can see all over the sky with no obstacles.
(Measurement can not be done indoors.)
Measurement may not be done where there is a strong electric wave near a broadcasting antenna.



Direction of Antenna
Place the antenna horizontally.
This unit can receive signals from satellites above an angle of 10 degrees elevation.



Notice of Measurement Time
Measurement can not be done for some period of time a day because not enough GPS satellites are orbiting to calculate all the time.
Measurement impossible time changes always because GPS satellites are orbiting.

LOCATION OF CONTROLS

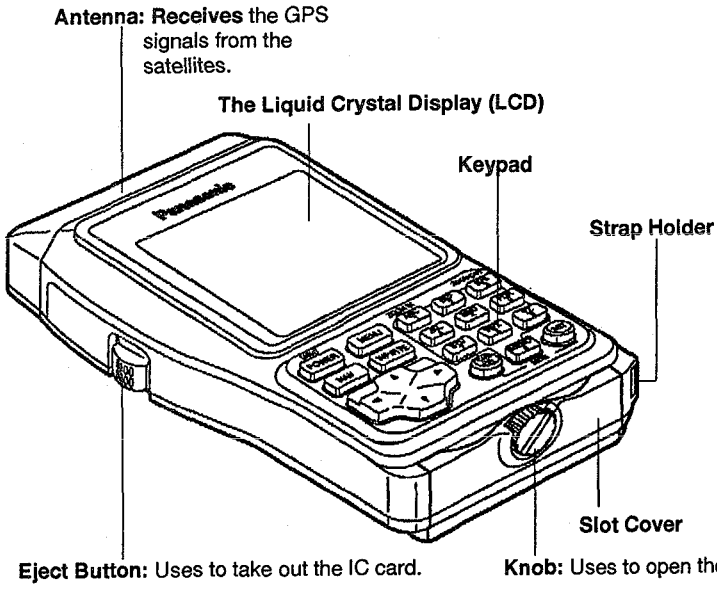

Antenna: Receives the GPS signals from the satellites.
The Liquid Crystal Display (LCD)
Keypad
Strap Holder
Slot Cover
Eject Button: Uses to take out the IC card.
Knob: Uses to open the slot cover.

Fig. 1

Keypad

POWER/LIGHT Key

LIGHT
POWER

Turns the power on and off and controls the screen backlighting.
Each press changes the LCD backlighting status as follows.
Darker (screen light on) → Brighter (screen light on) → OFF (screen light off) → Darker

Mode Selection Keys

WP/RTE

Accesses Waypoint/Route (WP/RTE) selection mode.

NAV

Accesses the navigation (NAV) mode.

MENU

Displays the MENU and controls many aspects of the operation.

Zoom Keys

ZOOM IN
ABC 1

ZOOM IN key: Enlarges the map.

ZOOM OUT
ABC 1

ZOOM OUT key: Minimizes the map.

Alphanumeric Keys

ABC 1 | DEF 2 | GHI 3
JKL 4 | MNO 5 | PQR 6
STU 7 | VWX 8 | YZ 9
MEMO 0

Enters numerals or characters (Alphabets).
- Each press of the alphanumeric key changes as follows.

(Example)
ABC 1 A→B→C→1→A

Arrow Keys (Cursor Control Keys)

Moves the highlighted field (the cursor) to the arrow direction, the '+' cursor on the map viewing screen and change the page to display.

▲ Moves to the up direction.
▼ Moves to the down direction.
◀ Moves to the left direction.
▶ Moves to the right direction.

SET Key

SET

Confirms an entry or selection.

CANCEL Key

CAN CEL

Cancels the operation to proceed and deletes the information in the cursor field.

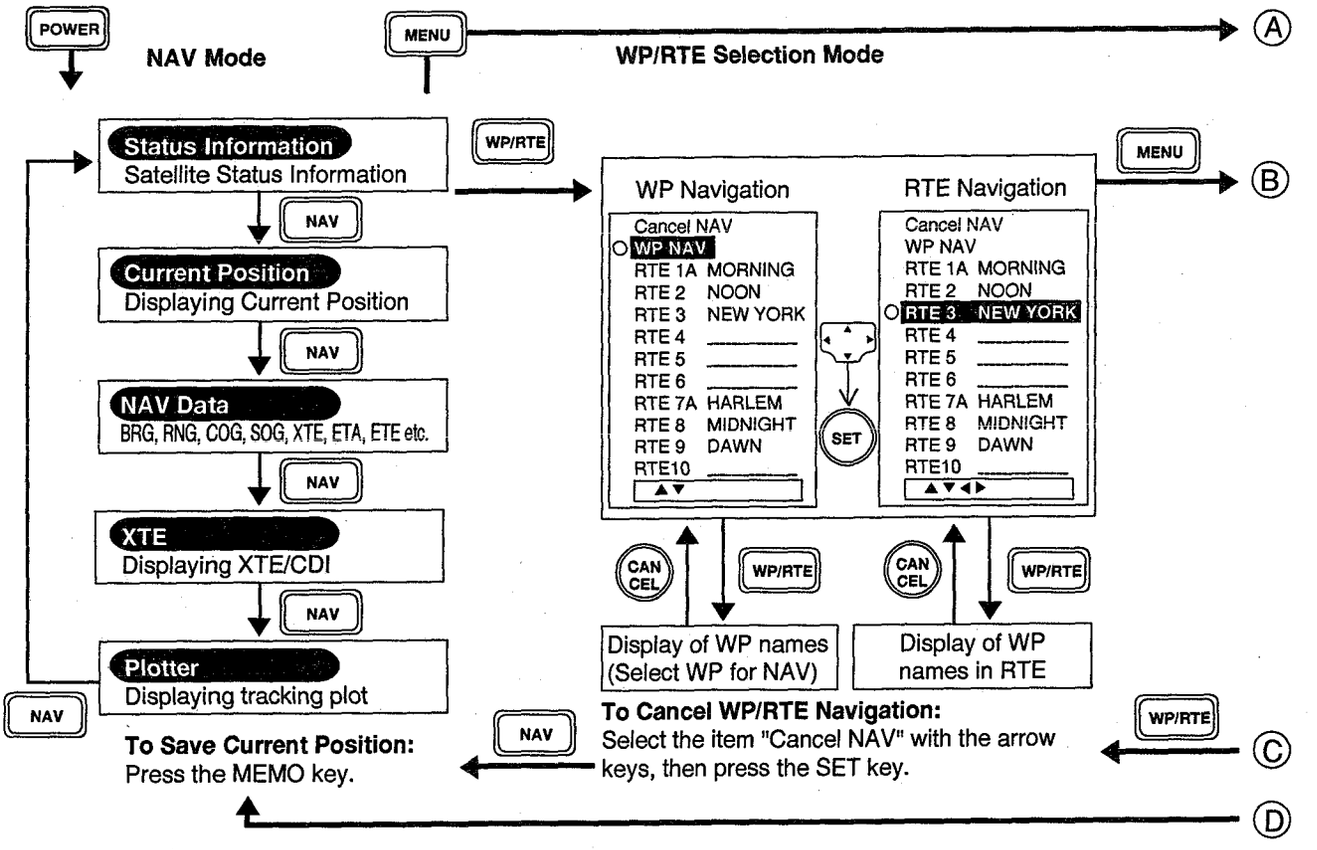
MEMO Key

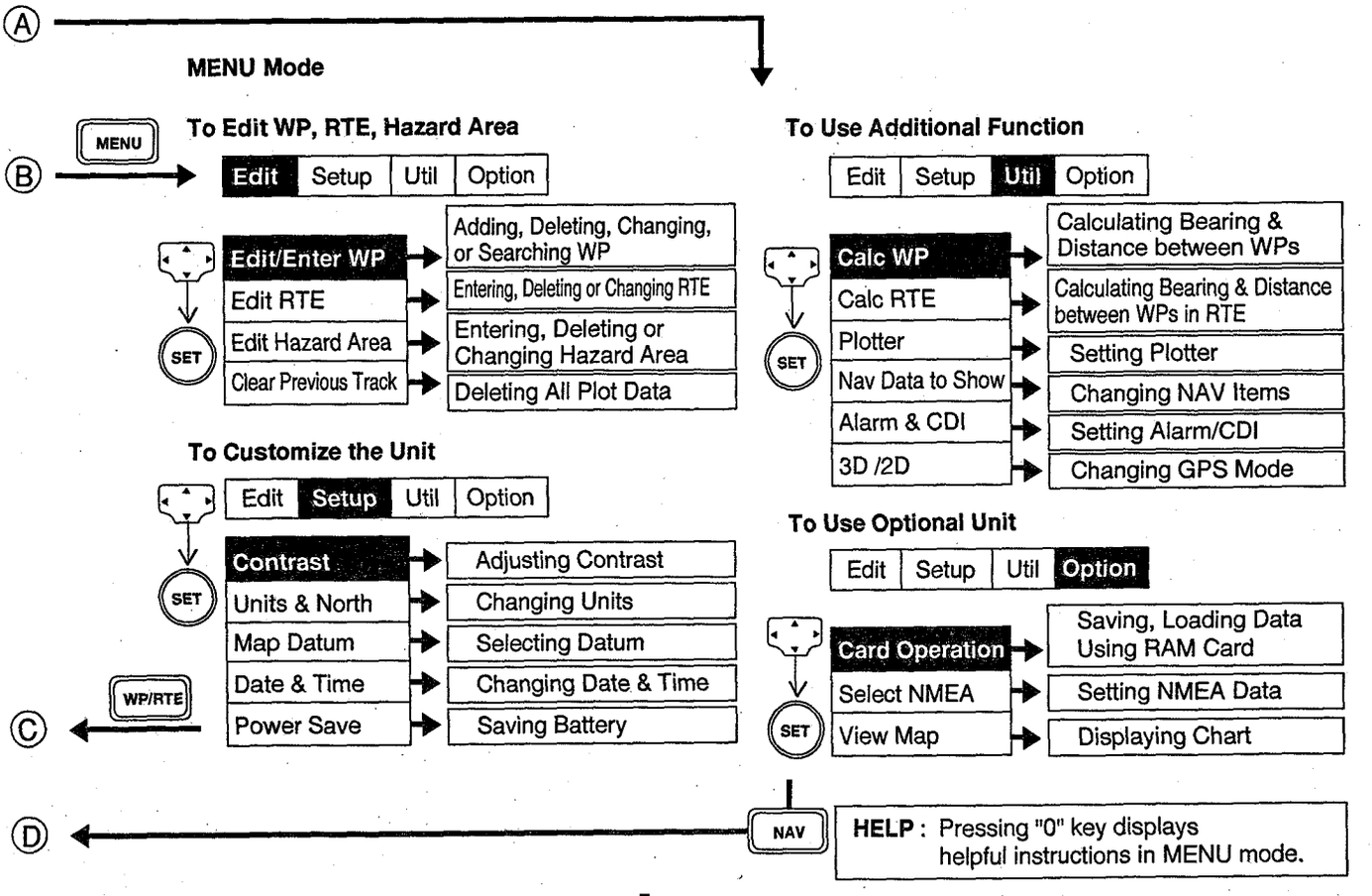
MEMO 0

Stores your current position in the waypoint list.

Note:
To use MOB function, press the SET key and the CANCEL key simultaneously.

OPERATIONS


POWER
NAV Mode
MENU
WP/RTE Selection Mode
A
Status Information
Satellite Status Information
WP/RTE
NAV
Current Position
Displaying Current Position
NAV Data
BRG, RNG, COG, SOG, XTE, ETA, ETE etc.
XTE
Displaying XTE/CDI
Plotter
Displaying tracking plot
WP Navigation
RTE Navigation
Cancel NAV
WP NAV
RTE 1A MORNING
RTE 2 NOON
RTE 3 NEW YORK
RTE 4
RTE 5
RTE 6
RTE 7A HARLEM
RTE 8 MIDNIGHT
RTE 9 DAWN
RTE10
SET
CAN CEL
Display of WP names (Select WP for NAV)
Display of WP names in RTE
B
C
D
To Save Current Position:
Press the MEMO key.
To Cancel WP/RTE Navigation:
Select the item "Cancel NAV" with the arrow keys, then press the SET key.

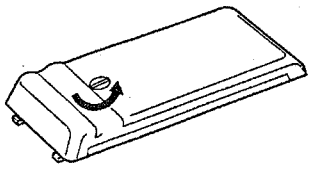

A
MENU Mode
B
MENU
To Edit WP, RTE, Hazard Area
Edit
Setup
Util
Option
Edit/Enter WP
Edit RTE
Edit Hazard Area
Clear Previous Track
Adding, Deleting, Changing, or Searching WP
Entering, Deleting or Changing RTE
Entering, Deleting or Changing Hazard Area
Deleting All Plot Data
SET
To Customize the Unit
Contrast
Units & North
Map Datum
Date & Time
Power Save
Adjusting Contrast
Changing Units
Selecting Datum
Changing Date & Time
Saving Battery
WP/RTE
C
To Use Additional Function
Calc WP
Calc RTE
Plotter
Nav Data to Show
Alarm & CDI
3D /2D
Calculating Bearing & Distance between WPs
Calculating Bearing & Distance between WPs in RTE
Setting Plotter
Changing NAV Items
Setting Alarm/CDI
Changing GPS Mode
To Use Optional Unit
Card Operation
Select NMEA
View Map
Saving, Loading Data Using RAM Card
Setting NMEA Data
Displaying Chart
D
NAV
HELP : Pressing "0" key displays helpful instructions in MENU mode.

INSTALLING THE BATTERY

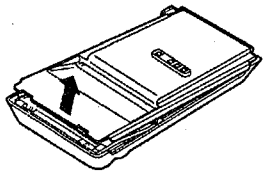
- This unit operates for approx. 5 hours using 6 AA (LR6) alkaline batteries, screen light is off, without using IC card at 68 °F (20 °C).
- We recommend you to use of alkaline batteries (AA size, LR6, 1.5V).
- This unit will operate for approx. one hour using conventional manganese batteries [continuous use with Panasonic batteries, at 68 °F (20 °C)].

■ Installing Batteries into Battery Case

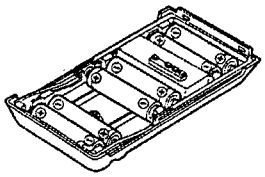
1 Loosen the screw on the back side of the battery case.



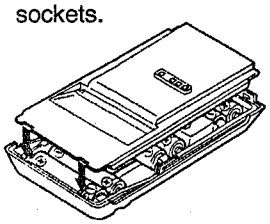
2 Open the cover of the battery case. Lift the cover as shown.

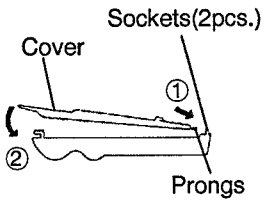


3 Install batteries (6pcs.) on the battery case. Observe with the correct polarity indication.

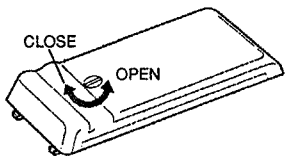


4 Place the cover on the battery case by putting the prongs into the sockets.

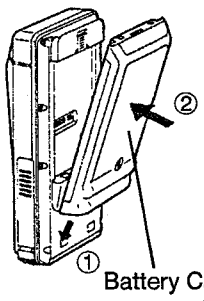




5 Tighten the screw on the back side of the battery case.



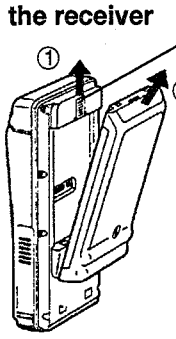
■ Attach Battery Case to the Receiver



1 Attach the battery case to the receiver.

2 Push the battery case until a click is heard.

To remove the battery pack from the receiver



1 Push up the battery holder tab to release the battery pack.

2 Grasp the battery pack and lift it from the receiver.

DISASSEMBLY INSTRUCTIONS

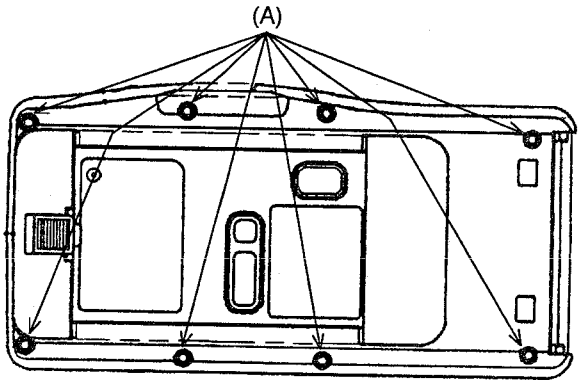


Fig. 2

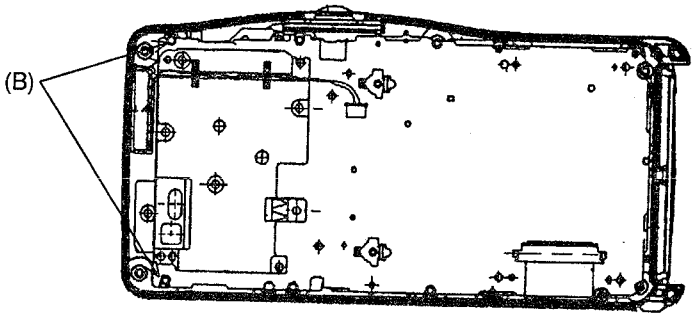


Fig. 3

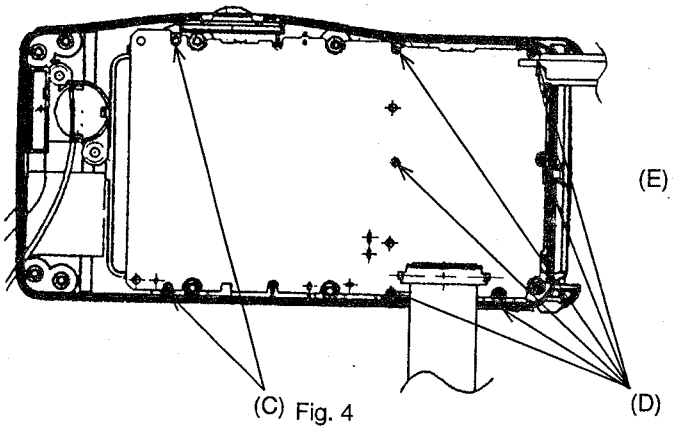


Fig. 4

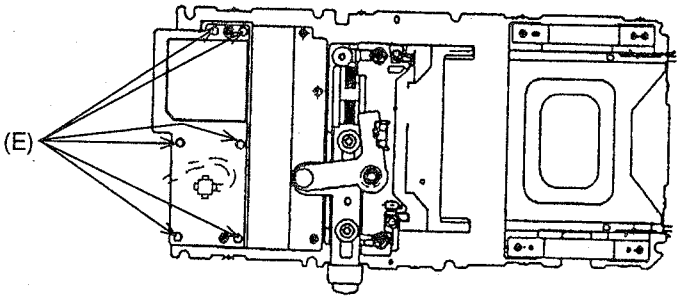


Fig. 5

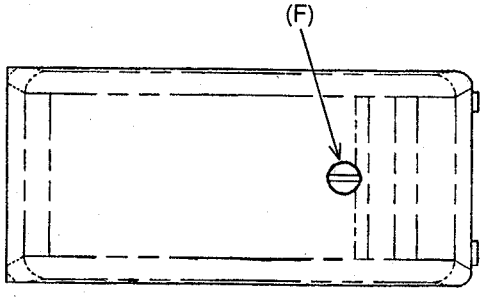


Fig. 6

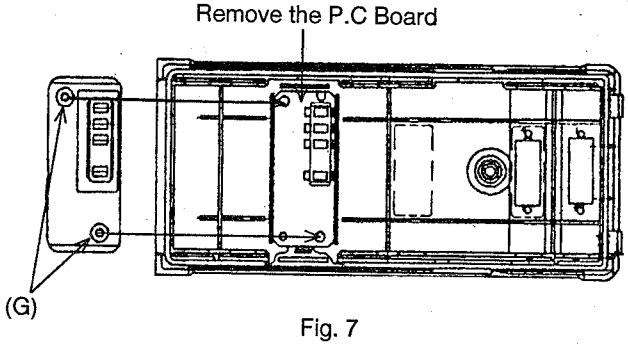


Fig. 7

Ref. No.	Procedure	Shown in Fig.—	To remove—.	Remove—.
1	1	2	Rear Cabinet	Screws (PQHE10028Z) ..... (A)×8
2	1,2	3	Main P.C. Board	Screws (2.3×8) ..... (B)×2
3	1~3	4	LCD P.C. Board	Screws (2.3×8) ..... (C)×2
4	1~4	4	LCD P.C. Board	Screws (2×5) ..... (D)×6
5	1~5	5	Antenna P.C. Boad	Screws (2×4) ..... (E)×6
6	6	6	Battery Cover	Screw(PQBV10001Z) ..... (F)×1
7	6,7	7	P.C. Board	Screws(2.6×8) ..... (G)×2
8	6~8	7	Battery P.C. Board	Remove the P.C. Board

ADJUSTMENTS

Feedback Voltage of PLL Circuit

At indoor temperature, measuring the feedback voltage (TP1) of the low pass filter output with the Digital Voltmeter, rotate C277 with adjusting driver and set the feedback voltage DC 1.4 V.

Center Frequency of IFT

Connect CN204 with the signal generator output, and the 1st IF amp output (TP2) with the spectrum analyzer via resistor 5.6 kΩ. Set the spectrum analyzer at fcent = 18.414 MHz/span = 10 MHz/reference level = –40 dBm/MAX hold mode.
And set the signal generator at fcent = 1575.42 MHz/output level = –70 dBm and apply the auto-sweep at sweep range = 10 MHz. And confirm the frequency character of IFT appearing at the spectrum analyzer a few minutes after, if its center frequency is higher than 18.414 MHz, turn the core of FL203 left, and if it's lower than 18.414 MHz, turn the core of FL203 right with adjusting driver. After then, clear the display of the spectrum analyzer and confirm the frequency character again. Do such action over again to set the center frequency of IFT 18.414 MHz. Take care of treating core because it's easy to be destroyed.

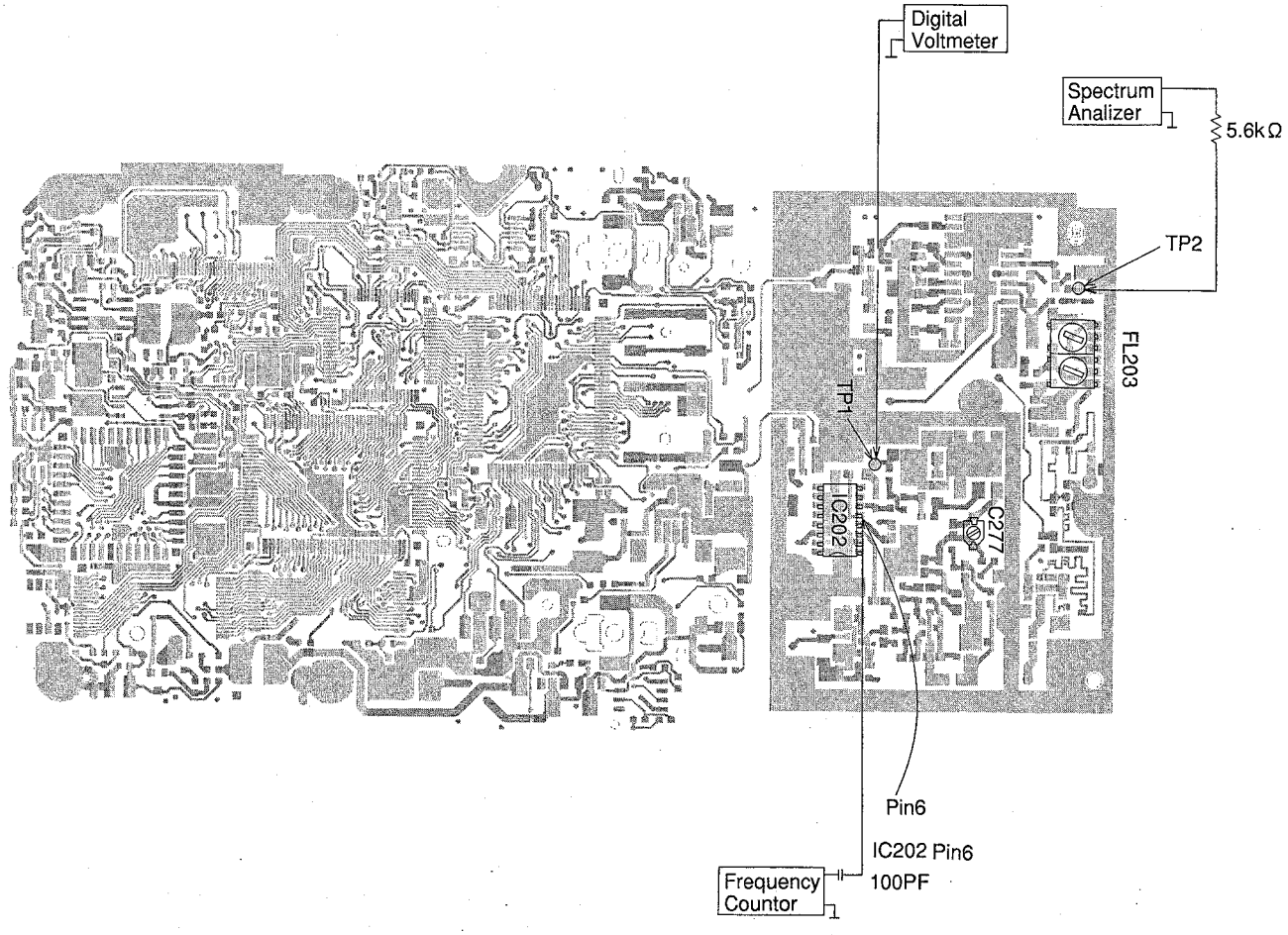


Fig. 8

Oscillating Frequency of Temperature Compensating Oscillator

At indoor temperature, connect IC202-6P to the frequency counter via capacitor, and rotate the trimmer capacitor of the temperature compensating Oscillator (X201) to adjust the frequency at 16.368000 MHz.

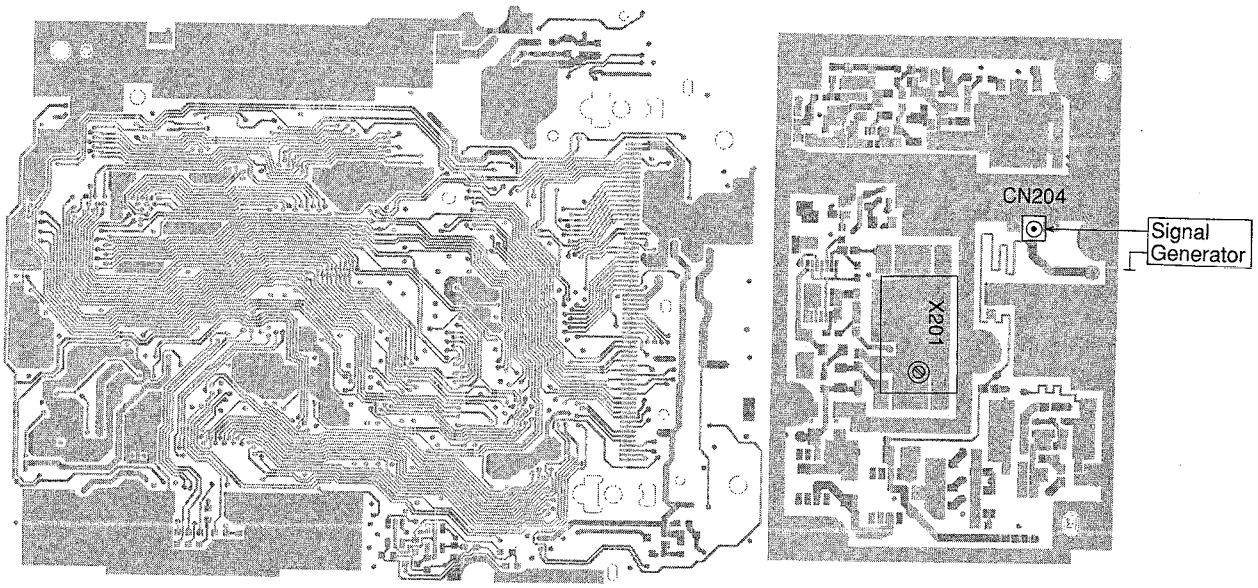


Fig. 9

Low Noise Amp. Board's Special Charactor of Frequency

Connect TP3 to tracking generator output of Spectrum Analyzer with tracking generator and TP4 to spectrum analyzer input. Then install measuring apparatus.

Start freq. = 1525 MHz.
Stop freq. = 1625 MHz.
T.G.output level = -40 dBm

Confirm below described shape of waveform appears when tracking generator is on.

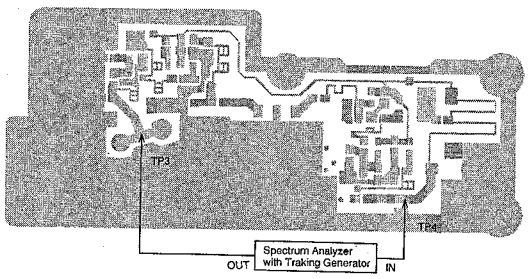


Fig. 10

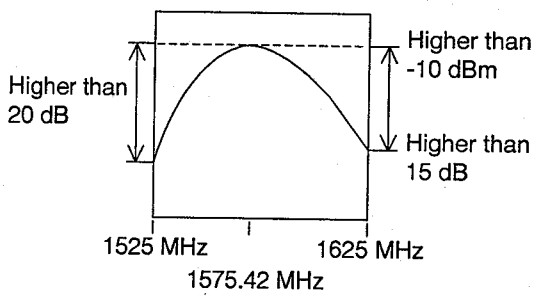
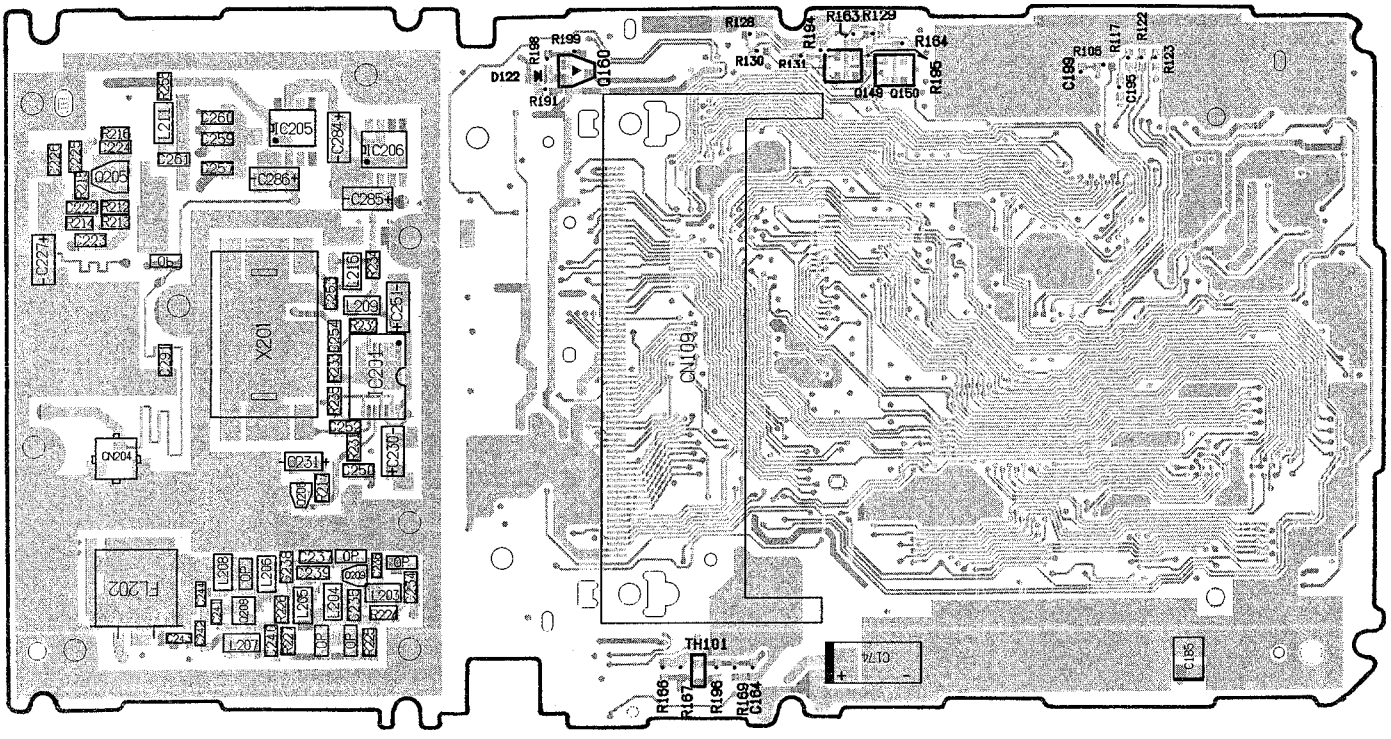
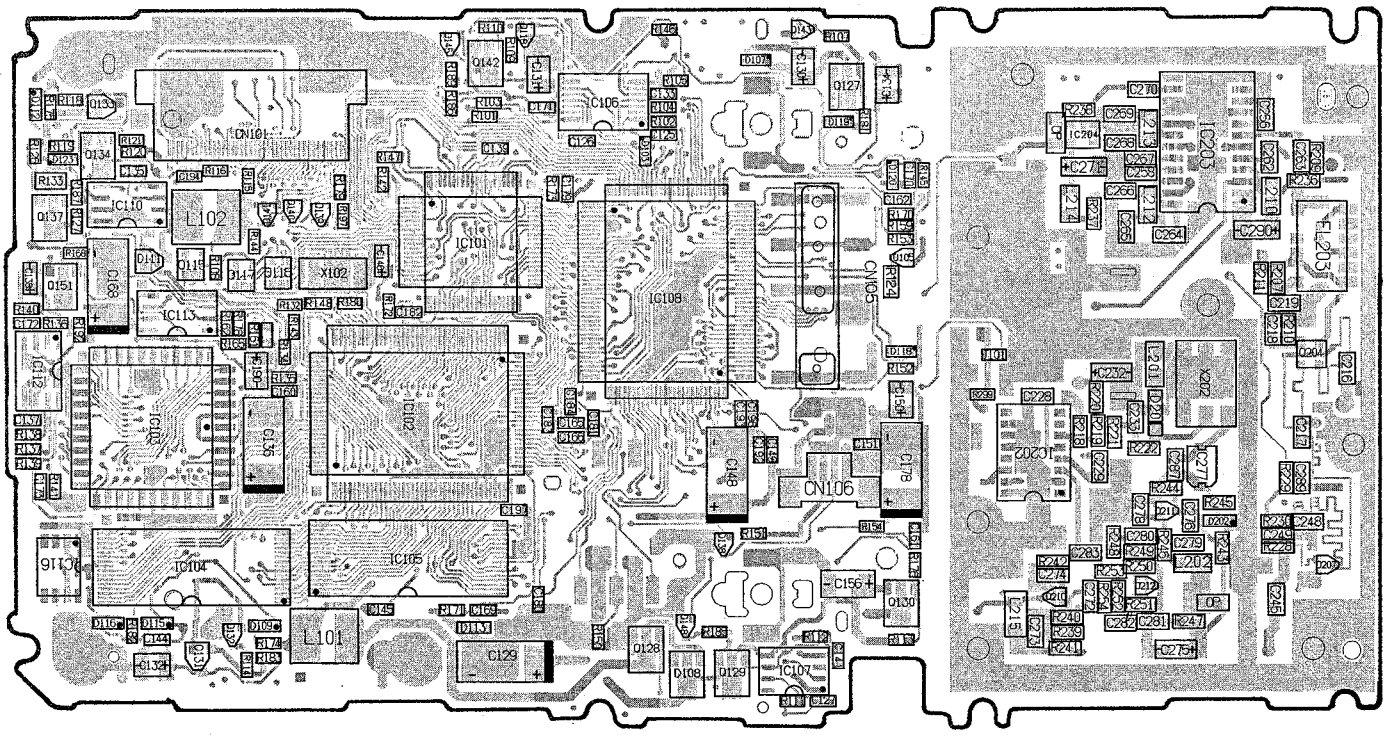


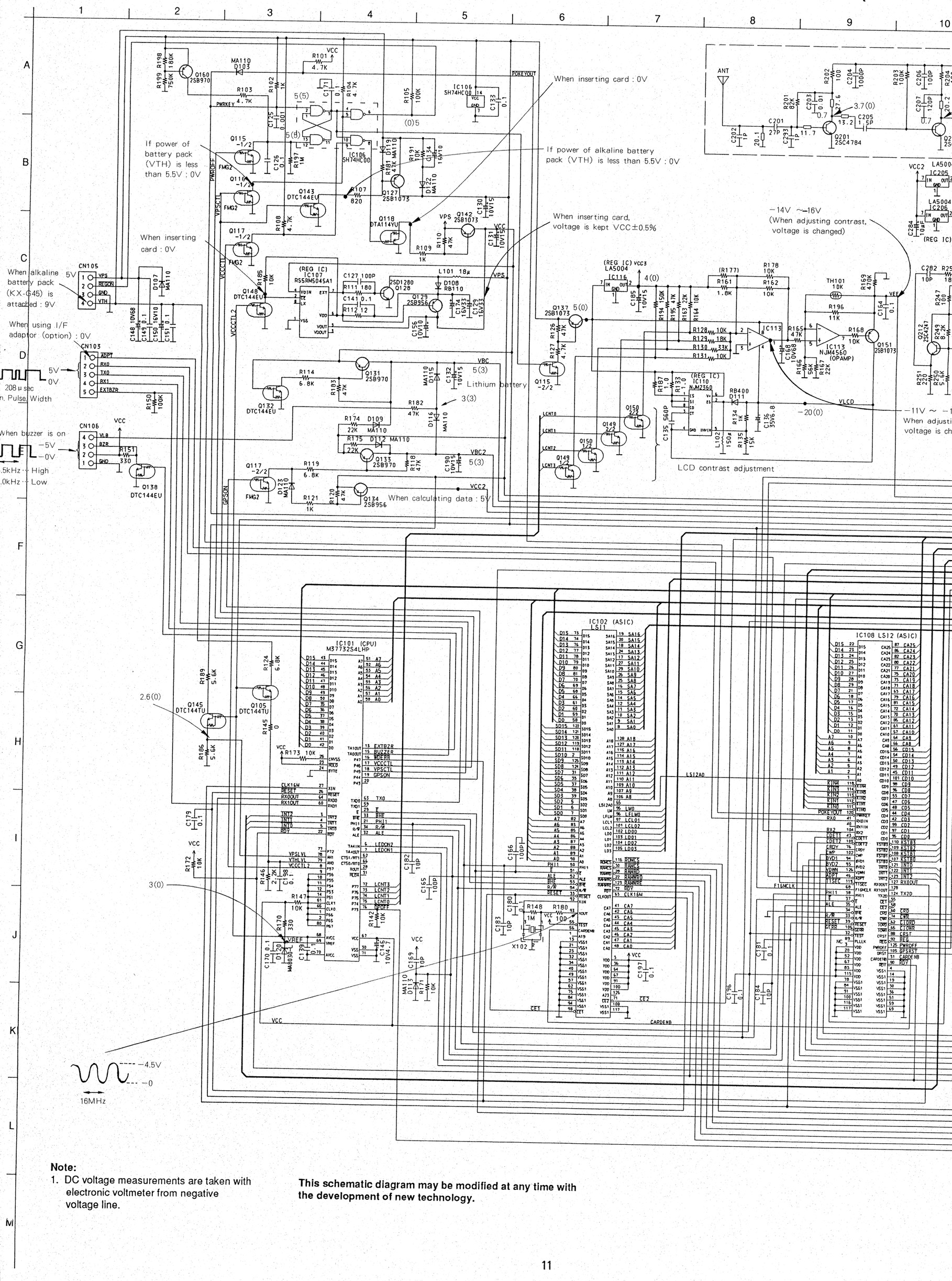
Fig. 11

CIRCUIT BOARD (MAIN P.C.BOARD)





SCHEMATIC DIAGRAM (MAIN P.C.



Note:

1. DC voltage measurements are taken with electronic voltmeter from negative voltage line.

This schematic diagram may be modified at any time with the development of new technology.

M (MAIN P.C.BOARD)

9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18

IC108 LS12 (ASIC)

IC104 (SRAM) CXK581100TM

IC105 (SRAM) CXK581100YM

IC103 (ROM) HN27C4096CP-12

(RSTIC) IC112 NJM2103

IC201 SH74HC04

IC202

IC203

IC204

LA5004 (REG IC)

CN101

CN109-1

CN109-2

When inserting card : 0V

When CPU is abnormal.
When VCC is less than 4.0V : 0V

When VCC is less than 4.7V : High level

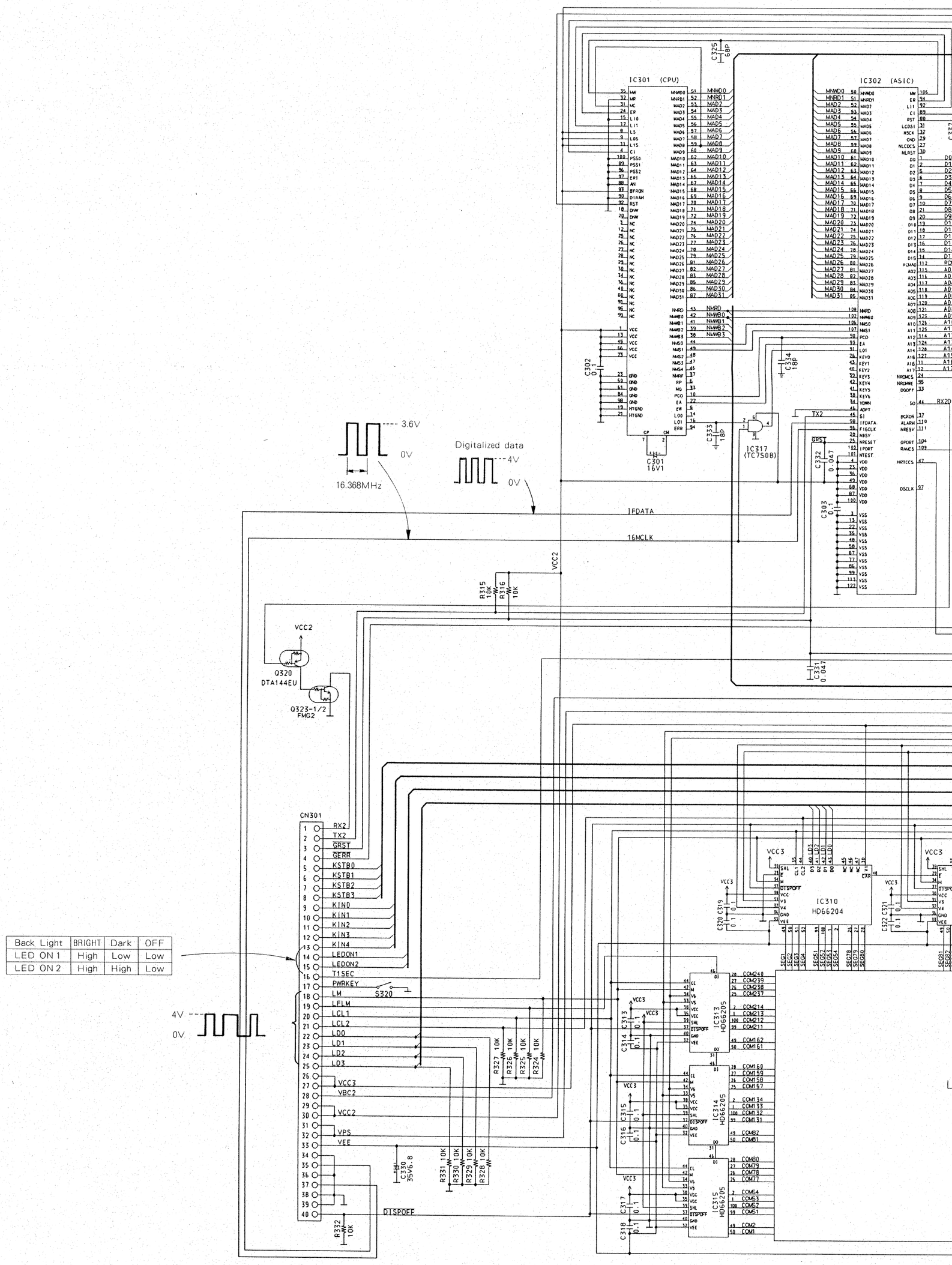
When inserting card : 0V

3.6V
0V
16.368MHz

Digitalized data
4V
0V

−11V ~ −13V
When adjusting contrast, voltage is changed.

4V
0V
1MHz



Back Light	BRIGHT	Dark	OFF
LED ON 1	High	Low	Low
LED ON 2	High	High	Low

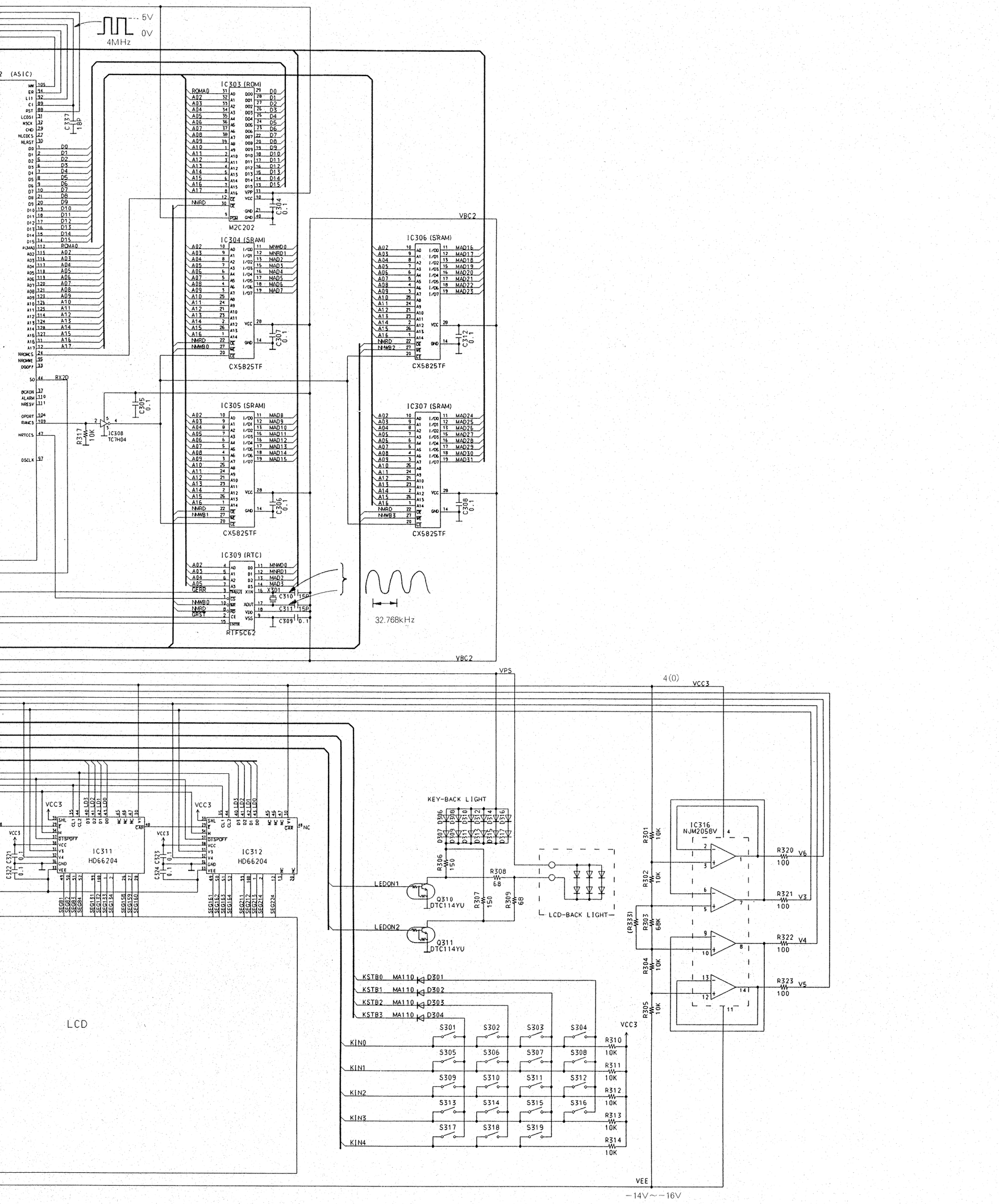
Notes:

1. S301: Cancel swicth.
2. S302: Zoom in switch.
3. S303: Alphanumeric switch.
4. S304: Arrow swich (up).
5. S305: Alphanumeric switch.
6. S306: Alphanumeric switch.
7. S307: Alphanumeric switch.
8. S308: Arrow switch (right).
9. S309: Memo switch.
10. S310: Navigation switch.
11. S311: Alphanumeric switch.
12. S312: Arrow swich (down).
13. S313: Set switch.
14. S314: Menu switch.
15. S315: Zoom out switch.
16. S316: Arrow switch (left).
17. S317: Alphanumeric switch.
18. S318: Waypoint/Route selection switch.
19. S319: Alphanumeric switch.
20. S320: Power/Light switch..
21. DC voltage measurements are taken with electronic voltmeter from negative voltage line.

No Mark: Power switch ON
Power switch OFF

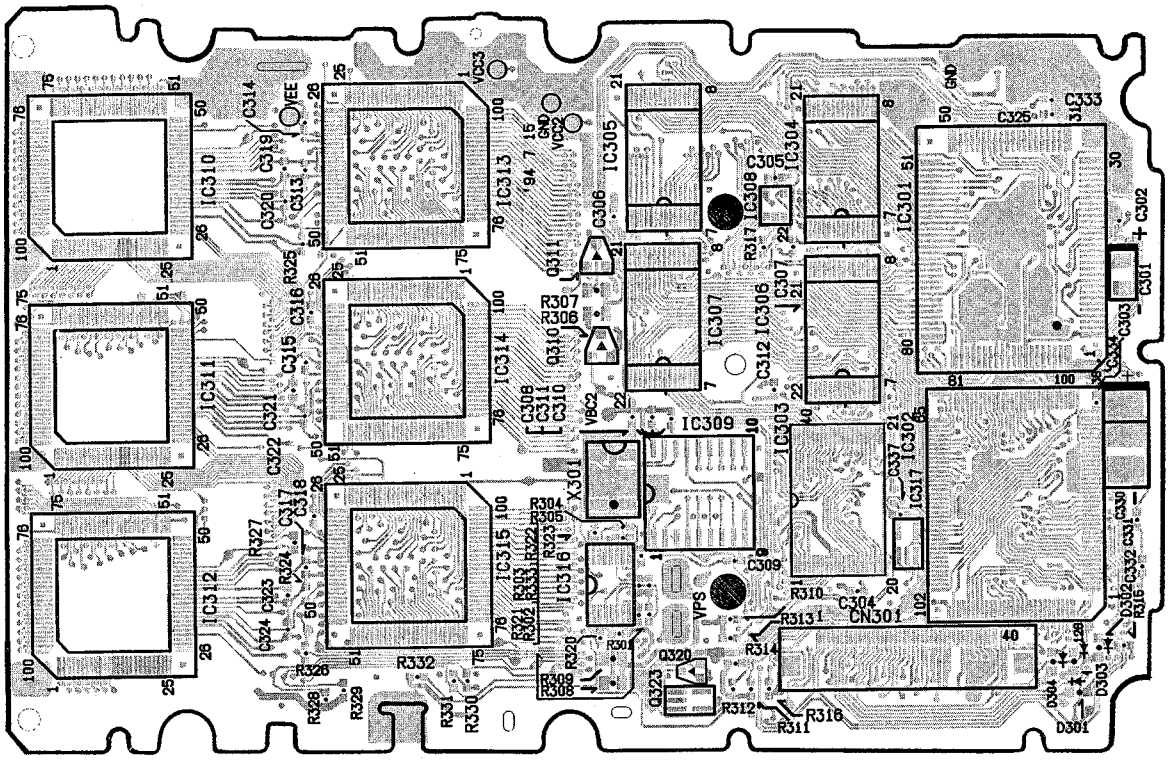
This schematic diagram may be modified at any time wi the development of new technology.

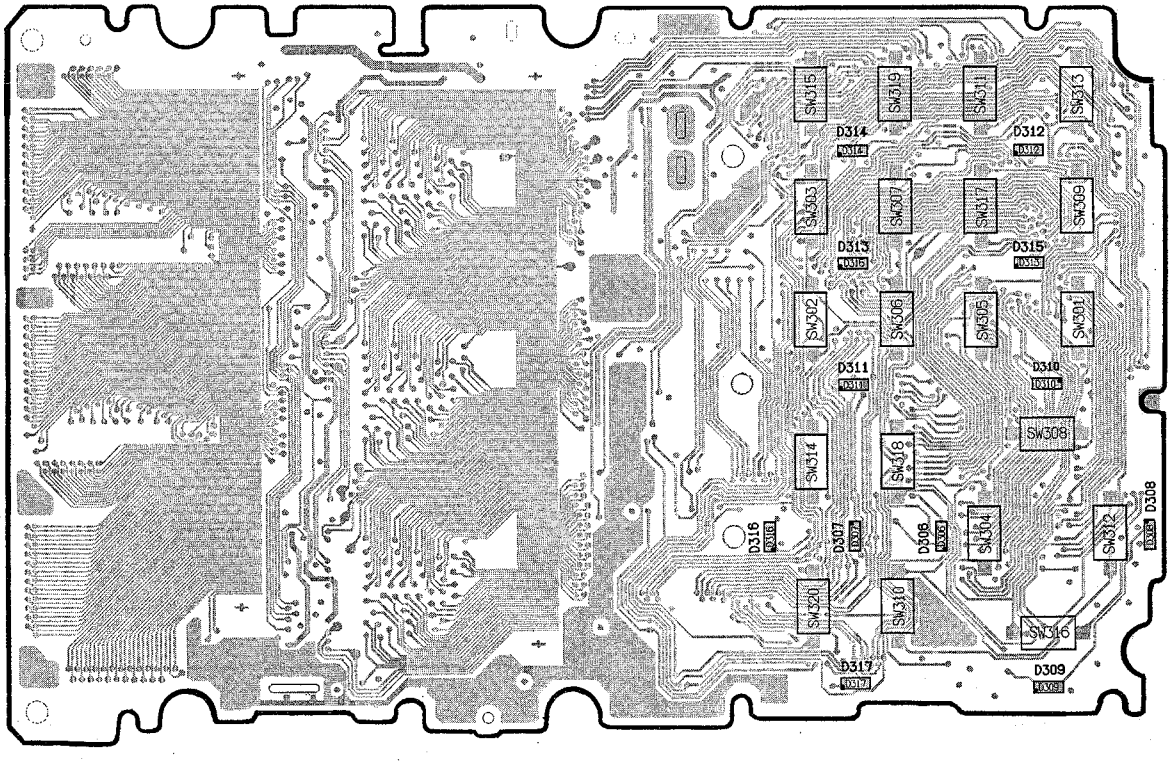
IAGRAM (LCD P.C.BOARD)



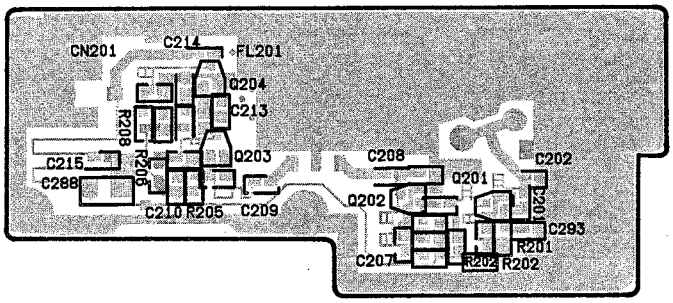
at any time with

CIRCUIT BOARD (LCD P.C.BOARD)

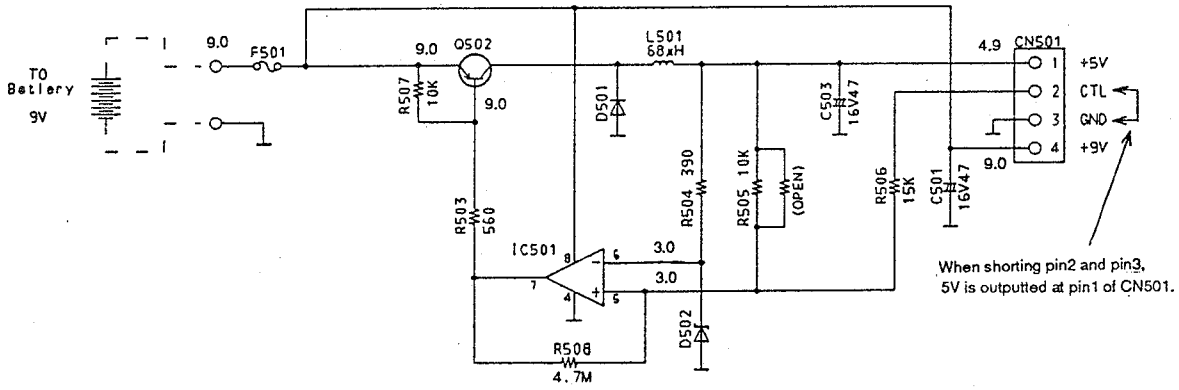




CIRCUIT BOARD (ANTENNA BOARD)



SCHEMATIC DIAGRAM (KX-G45X)

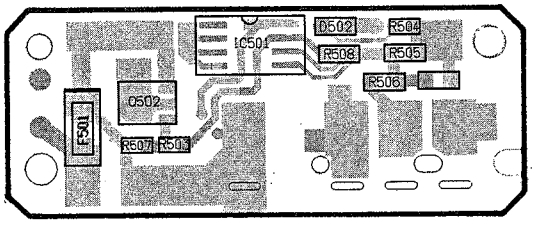


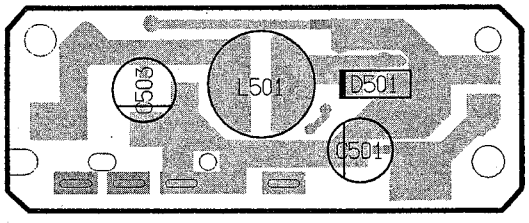
Note :

1. DC voltage measurements are taken with electronic voltmeter from negative voltage line.

This schematic diagram may be modified at any time with the development of new technology.

CIRCUIT BOARD (KX-G45X)





I/O INTERFACE

1. Connection for Computer

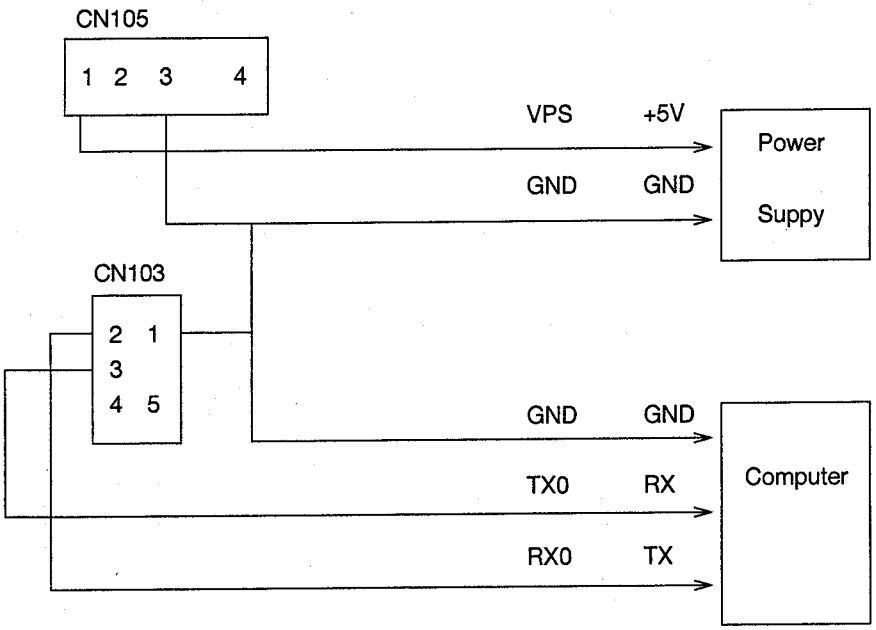


Fig. 12

2. Hardware Specifications

Protocol	: based on NMEA 0183 Version 2.00 NMEA=National Marine Electronics Association
Unit I/O Level	: TTL (Output level have to be converted to PC I/O spec.)
Baud rate	: 4800
Data bits	: 8 (d7=0)
Parity	: None
Stop bits	: One

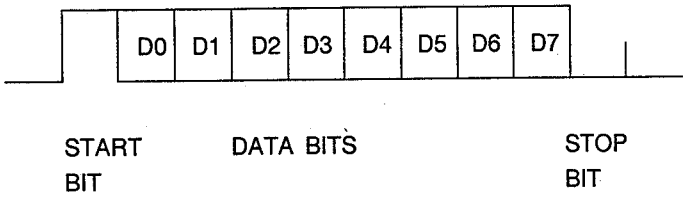


Fig. 13

3. Approved Sentence Formatters for KX-G5700X

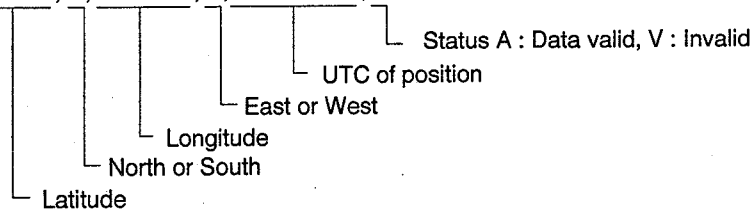
1) GLL : Geographic Position, Latitude/Longitude
   Latitude and Longitude of present vessel position, time of position fix and status.
2) GGA : Global positioning System Fix Data
   Time, position and fix related data for a GPS receiver.
3) VTG : Track Made Good and Ground Speed
   The actual track made good and speed relative to the ground.
4) BWC : Bearing and Distance to Way Point.
5) XTE : Cross-Track Error, Measured
   Magnitude of the position error perpendicular to the intended track line and the direction to steer to reduce the error.
6) GSA : CPS DOP and Active Satellites
   GPS receiver operating mode, satellites used for navigation and DOP values.
7) ZDA : Time and Date
   UTC, Day, month, year, and local time zone.
8) RMB : Recommended Minimum Navigation Information.
   Navigation data from present position to a destination way point provided by a Loran-C. TRANSIT, OMEGA, GPS, DECCA, navigation computer or other integrated navigation system. Check sum is mandatory in this sentence. This sentence always accompanies RMA or RMC sentences when a destination is active when provided by a Loran-C, TRANSIT or GPS receiver, other systems may transit $--RMB without $--RMA or $--RMC.
9) RMC : Recommended Minimum Specific GPS/TRANSIT Data
   Time, Date, position, course and speed data provided by a GPS or TRANSIT navigation receiver. Check sum is mandatory in this sentence. This sentence is transmitted at intervals not exceeding 2 seconds and is always accompanied by RMB when a destination way point is active. RMC and RMB are the recommended minimum data to be provided by a GPS or TRANSIT receiver. All data fields must be provided, null fields used only when data is temporarily unavailable.

4. Field Types summary

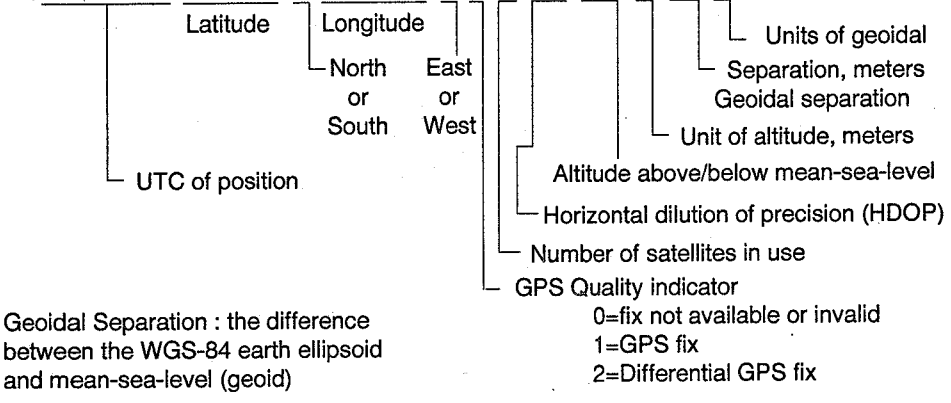
1) "$GP____" : Start of sentence and Talker ID
2) " , " : Data Separator
3) "*" : Check Sum Tag
4) "hh_" : Fixed length HEX numbers
5) Latitude : xx° xx. xx(x)' and North or South
6) Longitude : xxx° xx. xx(x)' and East or West

5. Approved Sentences

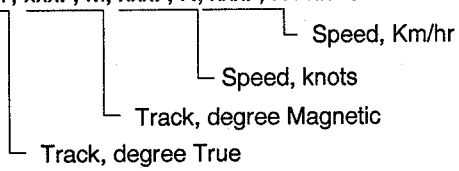
1) GLL : $GPGLL, xxxx. xx, N, xxxxx. xx, E, hhmmss. ss, A*hh<CR><LF>



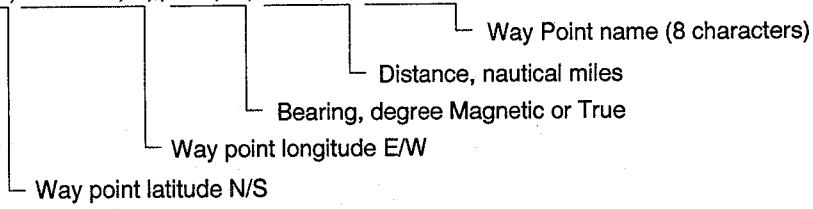
2) GGA : $GPGGA, hhmmss. ss, xxxx. xxx, N, xxxxx. xxx, E, x, xx, x. x, x. x, M, x. x, M, ,*hh<CR><LF>



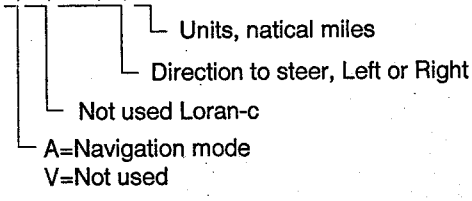
3) VTG : $GPVTG, xxx. , T, xxx. , M, xxx. , N, xxx. , K*hh<CR><LF>



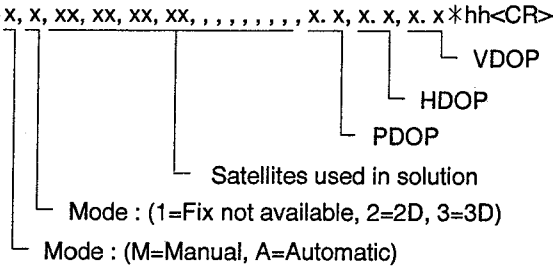
4) BWC : $GPBWC, , xxxx. xx, N, xxxxx. xx, E, ,xxx. , M, xxx. x, N, xxxxxxxx<CR><LF>


Way Point name (8 characters)
Distance, nautical miles
Bearing, degree Magnetic or True
Way point longitude E/W
Way point latitude N/S

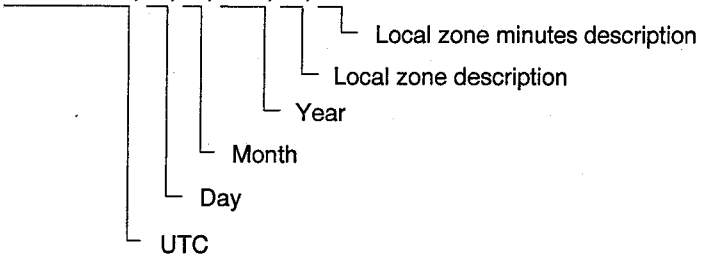
5) XTE : $GPXTE, x, A, x. x, L, N*hh<CR><LF>



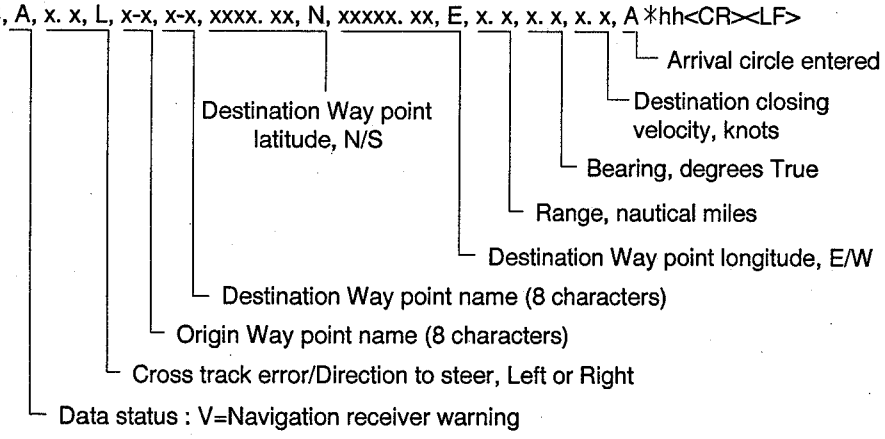
6) GSA : $GPGSA, x, x, xx, xx, xx, xx, , , , , , , , , x. x, x. x, x. x*hh<CR><LF>



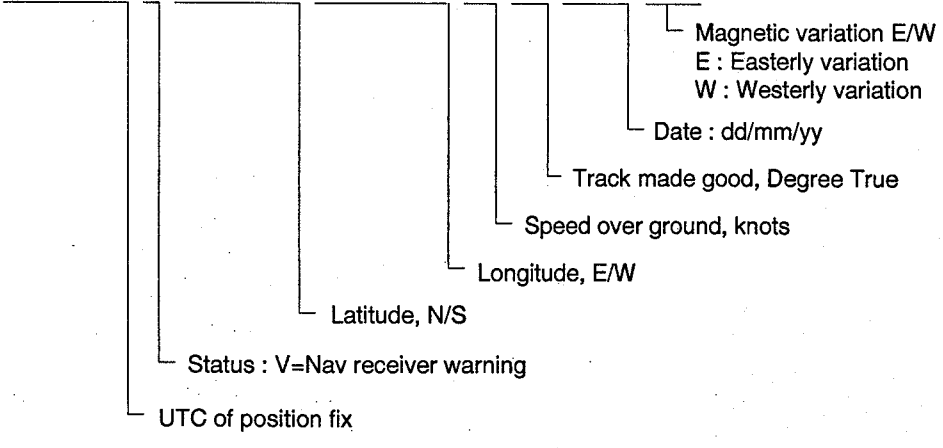
7) ZDA : $GPZDA, hhmmss. ss, xx, xx, xxxx, xx, xx*hh<CR><LF>



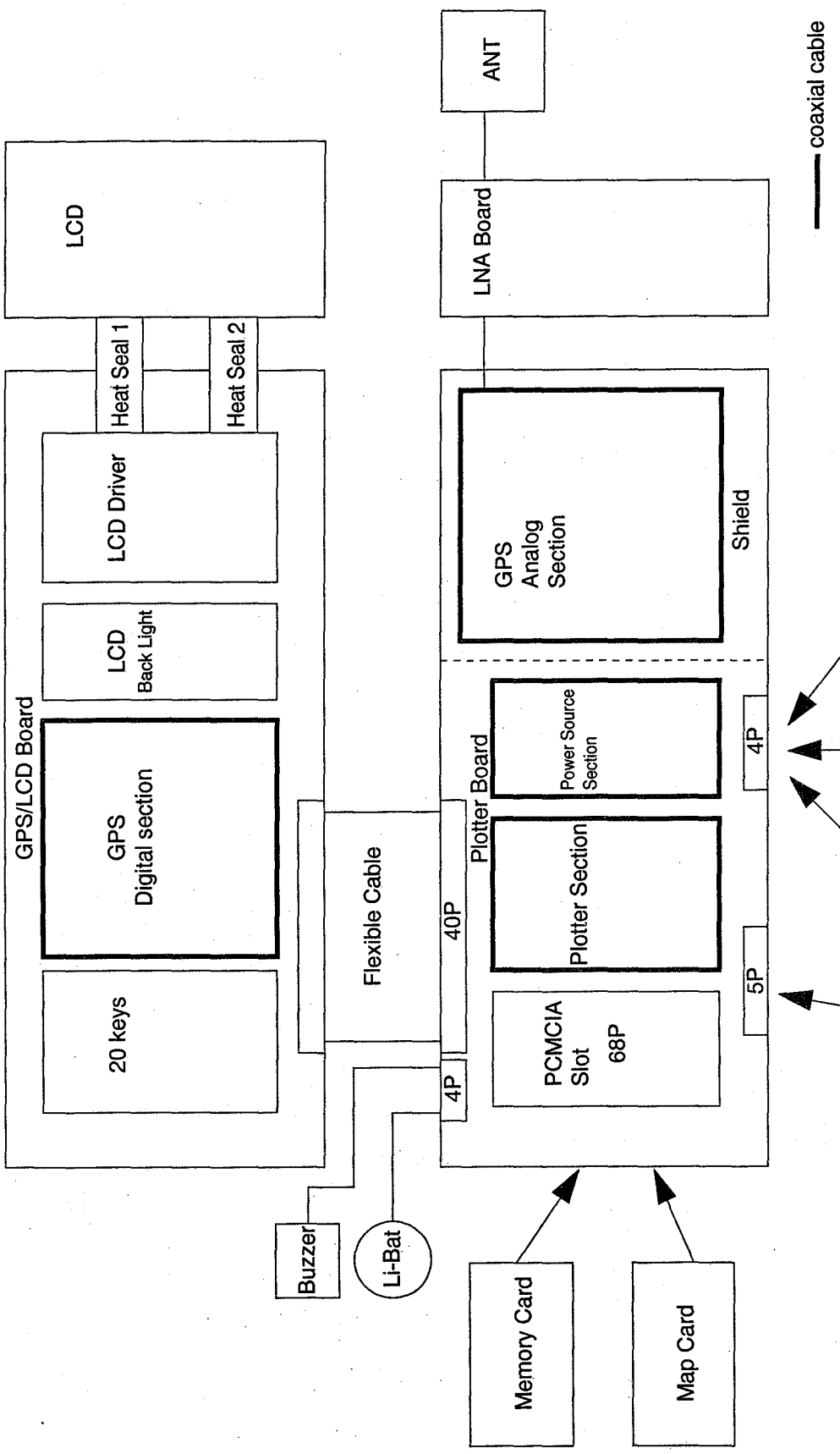
8) RMB : $GPRMB, A, x. x, L, x-x, x-x, xxxx. xx, N, xxxxx. xx, E, x. x, x. x, x. x, A*hh<CR><LF>


Arrival circle entered
Destination closing velocity, knots
Bearing, degrees True
Range, nautical miles
Destination Way point longitude, E/W
Destination Way point latitude, N/S
Destination Way point name (8 characters)
Origin Way point name (8 characters)
Cross track error/Direction to steer, Left or Right
Data status : V=Navigation receiver warning

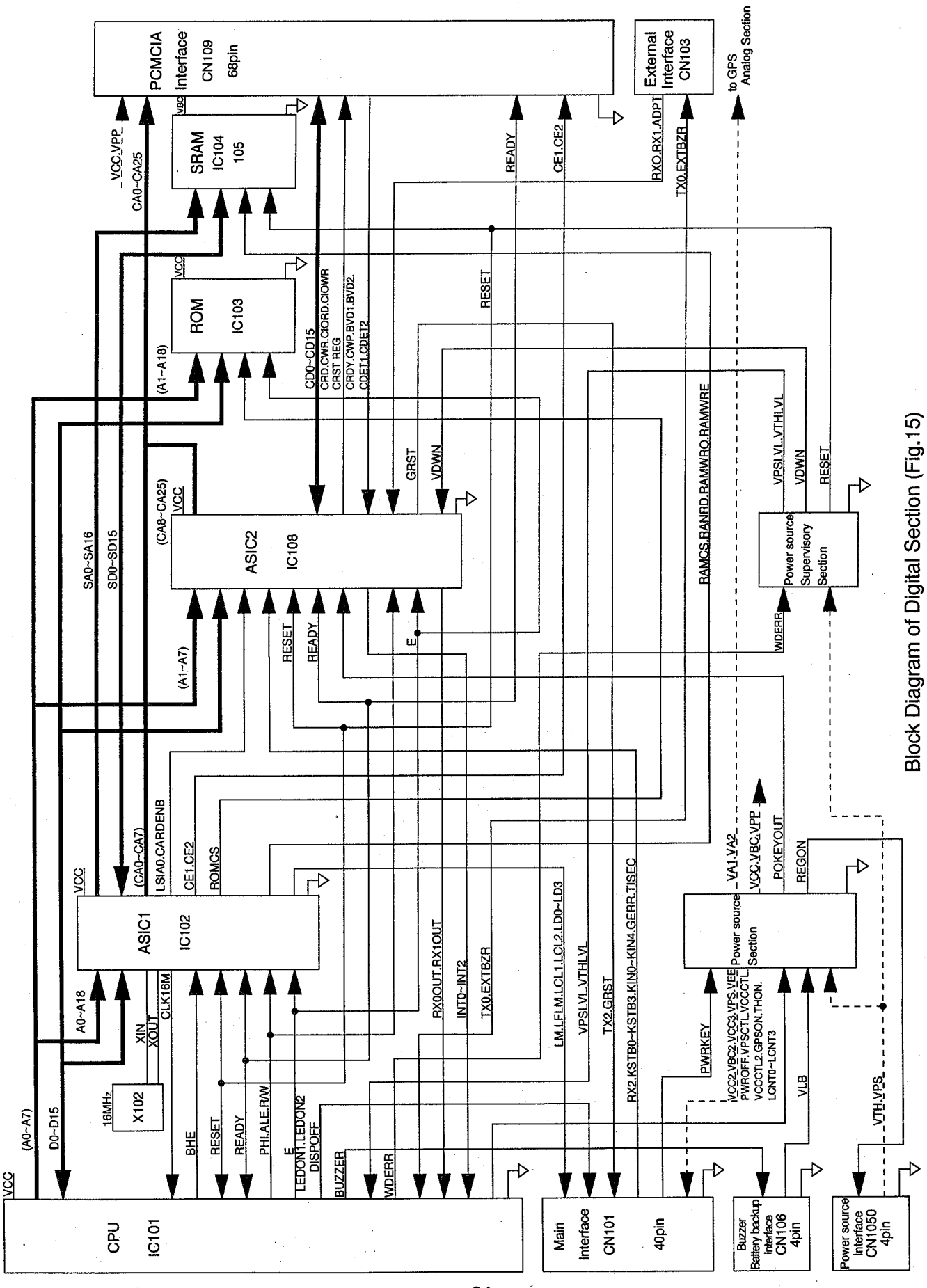
9) RMC : $GPRMC, hhmmss. ss, A, xxxx. xxx, N, xxxxx. xxx, E, x. x, x. x, xxxxxx, x. x, x*hh<CR><LF>



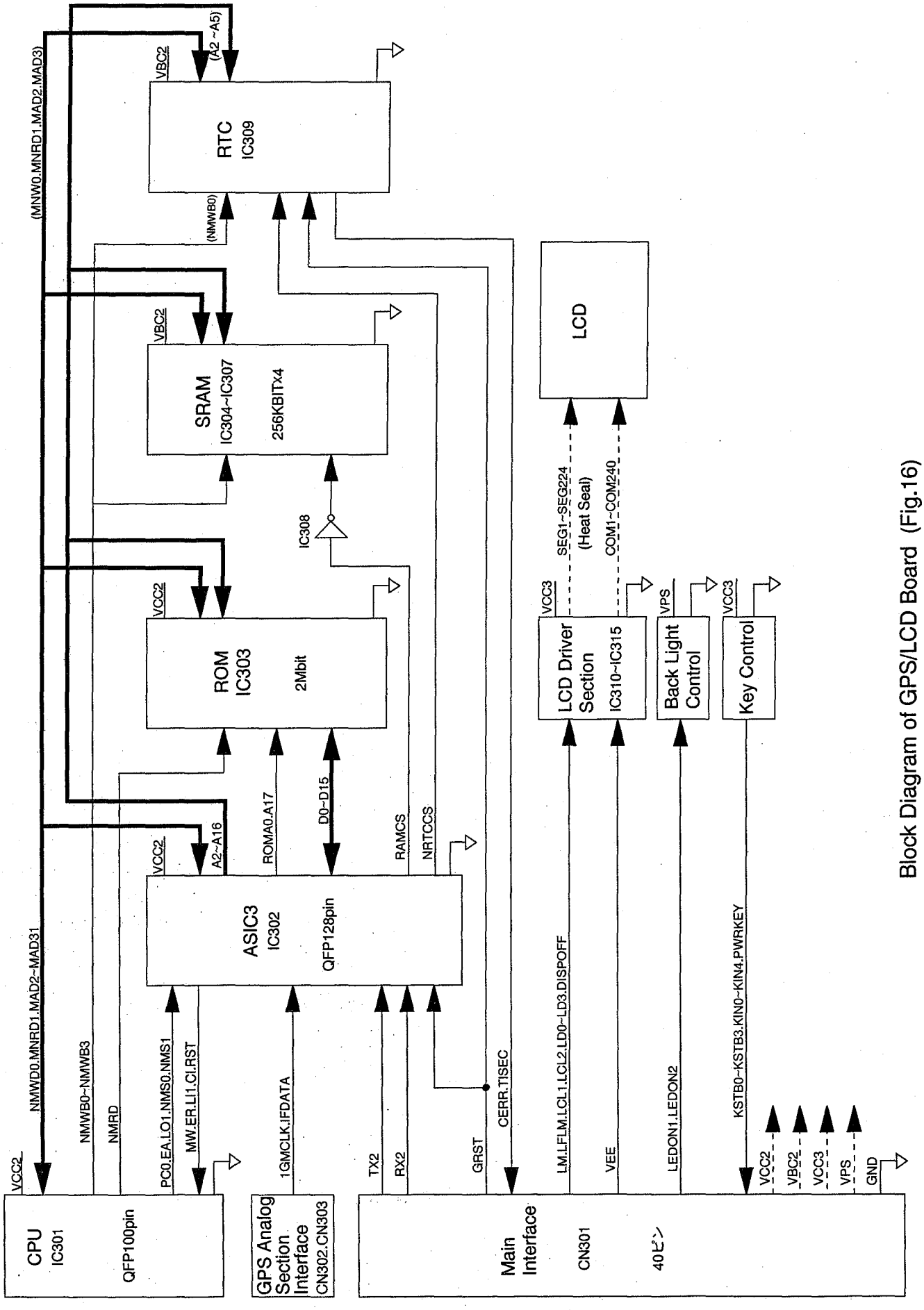
BLOCK DIAGRAM



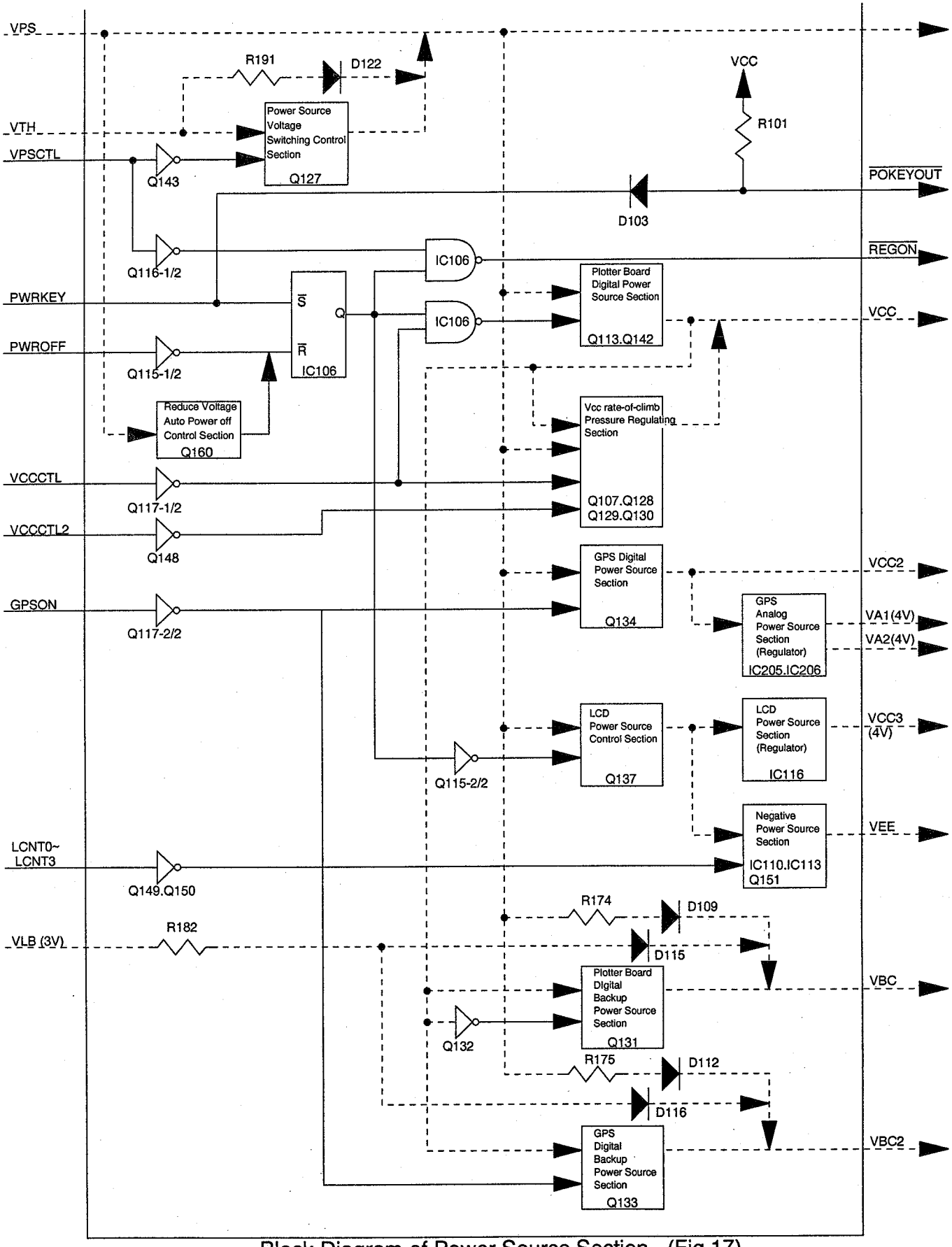
Block Diagram (Fig.14)



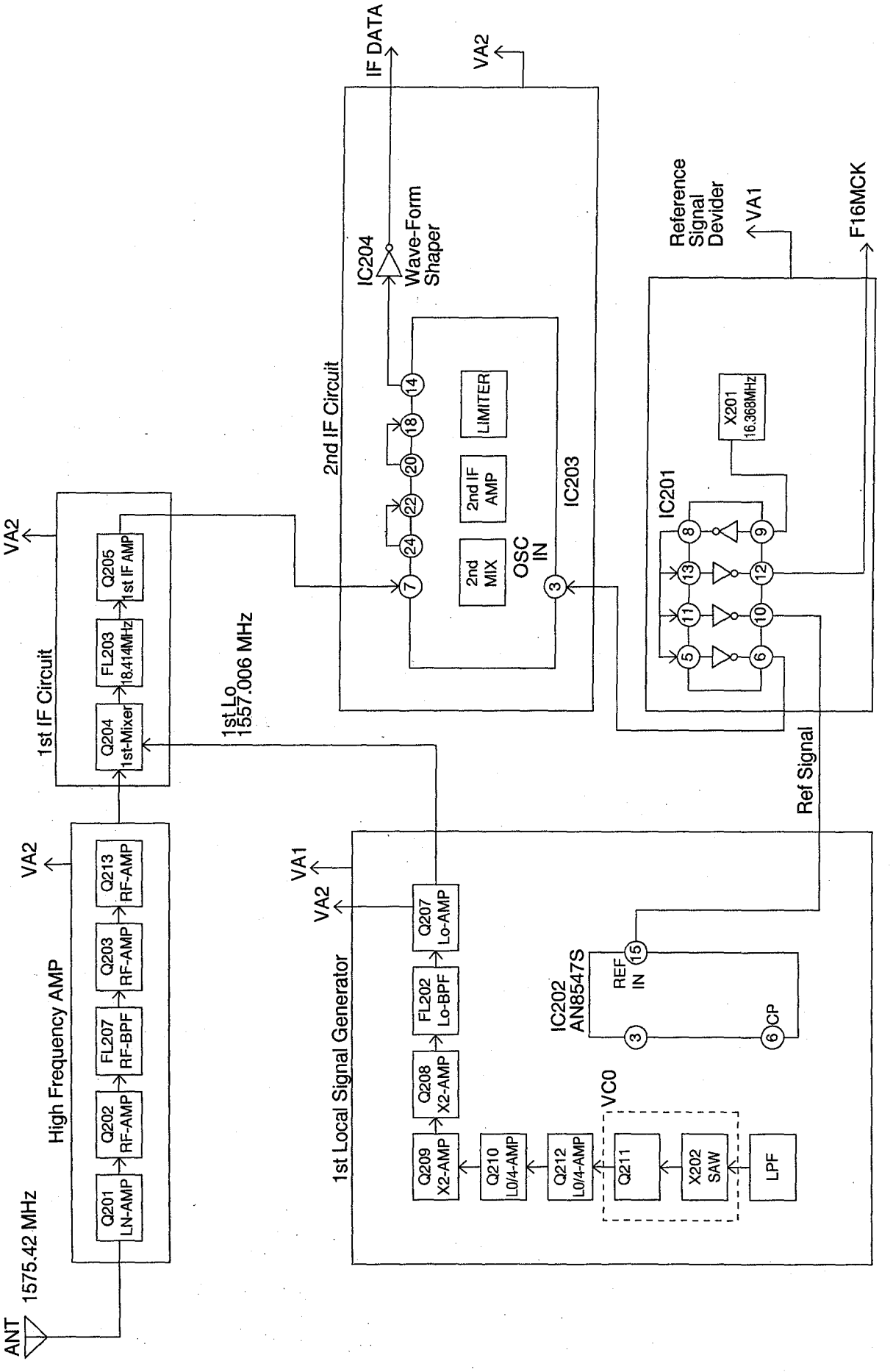
Block Diagram of Digital Section (Fig.15)



Block Diagram of GPS/LCD Board (Fig.16)



Block Diagram of Power Source Section (Fig.17)



Block diagram of GPS Analog Section (Fig.18)

ASIC PINS LOCATION

TABLE 1-1 ASIC PINS LOCATION

CHIP NAME: **PQVI1039F0F**
PIN NUMBER: 128 (I/O 109,VDD 7,VSS 12)

IC302

PIN	PIN NAME	TYPE	PIN	PIN NAME	TYPE	PIN	PIN NAME	TYPE
1	D0	B	51	MNRD1	B	101	NTEST	I
2	D1	B	52	MAD2	B	102	NMWBO	I
3	VSS	P	53	MAD3	B	103	IPORT	I
4	VDD	P	54	MAD4	B	104	OPORT	O
5	D2	B	55	MAD5	B	105	MW	O
6	D3	B	56	MAD6	B	106	NMS0	I
7	D4	B	57	MAD7	B	107	NMS1	I
8	D5	B	58	VSS	P	108	NMRD	I
9	D6	B	59	MAD8	B	109	RAMCS	O
10	D7	B	60	MAD9	B	110	ALARM	O
11	A16	O	61	MAD10	B	111	NRESV	O
12	A17	O	62	MAD11	B	112	ROMAO	O
13	VSS	P	63	MAD12	B	113	VSS	P
14	D15	B	64	MAD13	B	114	A12	O
15	D14	B	65	MAD14	B	115	A02	O
16	D13	B	66	MAD15	B	116	A03	O
17	D12	B	67	VSS	P	117	A04	O
18	D11	B	68	VDD	P	118	A05	O
19	D10	B	69	MAD16	B	119	A06	O
20	D9	B	70	MAD17	B	120	A07	O
21	D8	B	71	MAD18	B	121	A08	O
22	VSS	P	72	MAD19	B	122	VSS	P
23	VDD	P	73	MAD20	B	123	A09	O
24	NROMCS	O	74	MAD21	B	124	A13	O
25	NRESET	I	75	MAD22	B	125	A11	O
26	KEY0	I	76	MAD23	B	126	A10	O
27	NLCDCS	O	77	VSS	P	127	A15	O
28	NBSY	I	78	MAD24	B	128	A14	O
29	CND	O	79	MAD25	B			
30	NLRST	O	80	MAD26	B			
31	LCDSI	O	81	MAD27	B			
32	NSCK	O	82	MAD28	B			
33	DGOFF	O	83	MAD29	B			
34	VDWN	I	84	MAD30	B			
35	VSS	P	85	MAD31	B			
36	VDD	P	86	VSS	P			
37	BCKON	O	87	VDD	P			
38	KEY6	I	88	RST	O			
39	KEY3	I	89	CI	O			
40	KEY2	I	90	PCO	I			
41	KEY5	I	91	LO1	I			
42	KEY4	I	92	LI1	O			
43	KEY1	I	93	EA	I			
44	S0	O	94	ER	O			
45	S1	I	95	NROMWE	O			
46	ADPT	I	96	F16MCK	I			
47	NRTCCS	O	97	DSCLK	O			
48	VSS	P	98	IFDATA	I			
49	VDD	P	99	VSS	P			
50	MNWDO	B	100	VDD	P			

P:Power, GND I:Input O:Output B:Bidirection

Simultaneous Transition
•bidirectioal bus
MNWD0, MNRD1,
MAD2~MAD31 (32)
•bidirectional bus
D0~D15 (16)
•output bus
A02~A17 (16)

TABLE 1-2 ASIC PINS LOCATION

CHIP NAME: **PQVISL90PF2L**
PIN NUMBER: 128 (I/O 109,VDD 7,VSS 12)

PIN LOCATION 128 pin QFP5 (S1)

IC102 (PIN 1 - 128)

PIN	PIN NAME	I/O	I/O CELL
1	A19	O	UO2 + PDV1B
2	SD10	B	UT2P + PDV2B
3	VDD	P	VDD
4	* *	* *	* *
5	SD2	B	UT2P + PDV2B
6	SD1	B	UT2P + PDV2B
7	SD0	B	UT2P + PDV2B
8	SA0	O	UO2 + PDV1B
9	SA1	O	UO2 + PDV1B
10	SA2	O	UO2 + PDV1B
11	SA3	O	UO2 + PDV1B
12	SA4	O	UO2 + PDV1B
13	VSS1	P	VSS1
14	SA5	O	UO2 + PDV1B
15	SA6	O	UO2 + PDV1B
16	SA7	O	UO2 + PDV1B
17	SA12	O	UO2 + PDV1B
18	SA14	O	UO2 + PDV1B
19	SA16	O	UO2 + PDV1B
20	SA15	O	UO2 + PDV1B
21	VSS1	P	VSS1
22	XRAMWO	O	UO2 + PDV1B
23	VSS1	P	VSS1
24	SA13	O	UO2 + PDV1B
25	SA8	O	UO2 + PDV1B
26	SA9	O	UO2 + PDV1B
27	SA11	O	UO2 + PDV1B
28	XRAMRD	O	UO2 + PDV1B
29	SA10	O	UO2 + PDV1B
30	XRAMCS	O	UO2 + PDV1B
31	SD7	B	UT2P + PDV2B
32	VSS1	P	VSS1
33	XRESET	I	IBT
34	VSS1	P	VSS1
35	SD6	B	UT2P + PDV2B
36	VDD	P	VDD
37	SD5	B	UT2P + PDV2B
38	SD4	B	UT2P + PDV2B
39	SD3	B	UT2P + PDV2B
40	VSS1	P	VSS1
41	CA7	O	UO2 + PDV2B
42	CA6	O	UO2 + PDV2B
43	CA5	O	UO2 + PDV2B
44	CA4	O	UO2 + PDV2B
45	CA3	O	UO2 + PDV2B
46	CA2	O	UO2 + PDV2B
47	CA1	O	UO2 + PDV2B
48	CA0	O	UO2 + PDV2B
49	VSS1	P	VSS1
50	PHI1	I	IBT
51	XE	I	LIN
52	ALE	I	LIN
53	XBHE	I	LIN
54	RXW	I	LIN
55	XTEST	I	IBTP
56	CARDEB	I	IBT
57	VSS1	P	VSS1
58	D0	B	UT2P + PDV2B
59	D1	B	UT2P + PDV2B
60	D2	B	UT2P + PDV2B
61	D3	B	UT2P + PDV2B
62	VSS1	P	VSS1
63	CLK16M	O	UO2 + PDV1B
64	VDD1	P	VDD1
65	LSI2AO	O	UO2 +PDV1B
66	D4	B	UT2P + PDV2B
67	VDD	P	VDD
68	D5	B	UT2P + PDV2B
69	D6	B	UT2P + PDV2B
70	D7	B	UT2P + PDV2B
71	XCE2	O	UO2 + PDV2B
72	XRDY	O	UO2 + PDV2B
73	D15	B	UT2P + PDV2B
74	D14	B	UT2P + PDV2B
75	VSS1	P	VSS1
76	D13	B	UT2P + PDV2B
77	D12	B	UT2P + PDV2B
78	D11	B	UT2P + PDV2B
79	D10	B	UT2P + PDV2B
80	D9	B	UT2P + PDV2B
81	D8	B	UT2P + PDV2B
82	A7	I	IBTP
83	A6	I	IBTP
84	VSS1	P	VSS1
85	A5	I	IBTP
86	A4	I	IBTP
87	A3	I	IBTP
88	A2	I	IBTP
89	A1	I	IBTP
90	A0	I	IBTP
91	VDD1	P	VDD1
92	XIN	I	LIN + XT2
93	XOUT	O	LOT + XT2
94	VSS1	P	VSS1
95	LM	O	UO2 + PDV1B
96	LFLM	O	UO2 + PDV1B
97	LCL1	O	UO2 + PDV1B
98	XCE1	O	UO2 + PDV2B
99	* *	* *	* *
100	VDD	P	VDD
101	LCL2	O	UO2 + PDV1B
102	LD0	O	UO2 + PDV1B
103	LD1	O	UO2 + PDV1B
104	LD2	O	UO2 + PDV1B
105	LD3	O	UO2 + PDV1B
106	A8	O	UO2 + PDV1B
107	A9	O	UO2 + PDV1B
108	VSS1	P	VSS1
109	A10	O	UO2 + PDV1B
110	A11	O	UO2 + PDV1B
111	A12	O	UO2 + PDV1B
112	A13	O	UO2 + PDV1B
113	A14	O	UO2 + PDV1B
114	A15	O	UO2 + PDV1B
115	A16	O	UO2 + PDV1B
116	XROMCS	O	UO2 + PDV1B
117	VSS1	P	VSS1
118	SD11	B	UT2P + PDV2B
119	SD12	B	UT2P + PDV2B
120	SD13	B	UT2P + PDV2B
121	SD14	B	UT2P + PDV2B
122	SD15	B	UT2P + PDV2B
123	XRAMWE	O	UO2 + PDV1B
124	SD8	B	UT2P + PDV2B
125	SD9	B	UT2P + PDV2B
126	A23	O	UO2 + PDV1B
127	A17	O	UO2 + PDV1B
128	A18	O	UO2 + PDV1B

TABLE 1-3 ASIC PINS LOCATION

CHIP NAME: **PQVISL90PF1Y**
PIN NUMBER: 128 (I/O 109,VDD 7,VSS 12)

PIN LOCATION 128 pin QFP5 (S1)

IC108

(PIN 1 - 128)

PIN	PIN NAME	I/O	I/O CELL
1	A0	I	IBTP
2	A1	I	IBTP
3	VDD1	P	VDD1
4	VSS1	P	VSS1
5	A2	I	IBTP
6	A3	I	IBTP
7	A4	I	IBTP
8	A5	I	IBTP
9	A6	I	IBTP
10	A7	I	IBTP
11	D8	I/O	UT2P + PDV2B
12	D9	I/O	UT2P + PDV2B
13	D10	I/O	UT2P + PDV2B
14	VSS1	P	VSS1
15	D11	I/O	UT2P + PDV2B
16	D12	I/O	UT2P + PDV2B
17	D13	I/O	UT2P + PDV2B
18	D14	I/O	UT2P + PDV2B
19	VSS1	P	VSS1
20	VDD1	P	VDD1
21	D15	I/O	UT2P + PDV2B
22	D7	I/O	UT2P + PDV2B
23	D6	I/O	UT2P + PDV2B
24	D5	I/O	UT2P + PDV2B
25	D4	I/O	UT2P + PDV2B
26	D3	I/O	UT2P + PDV2B
27	D2	I/O	UT2P + PDV2B
28	D1	I/O	UT2P + PDV2B
29	D0	I/O	UT2P + PDV2B
30	VSS1	P	VSS1
31	CARDEN	O	UO2 + PDV1B
32	XTEST	I	IBTP
33	RXW	I	IBTP
34	XBHE	I	IBTP
35	ALE	I	IBTP
36	VSS1	P	VSS1
37	XE	I	IBTP
38	PHI1	I	IBTP
39	XRESET	I	IBTD
40	RXIIN	I	IBTP
41	RXOIN	I	IBTP
42	CD3	I/O	UT2P + PDV2B
43	XCDET1	I	IBTP
44	CD4	I/O	UT2P + PDV2B
45	CD11	I/O	UT2P + PDV2B
46	XADPT	I	IBTP
47	CD6	I/O	UT2P + PDV2B
48	CD5	I/O	UT2P + PDV2B
49	CD12	I/O	UT2P + PDV2B
50	CD13	I/O	UT2P + PDV2B
51	VSS1	P	VSS1
52	VDD1	P	VDD1
53	CD7	I/O	UT2P + PDV2B
54	CD14	I/O	UT2P + PDV2B
55	XCE1	O	UO2 + PDV2B
56	CD15	I/O	UT2P + PDV2B
57	CA10	O	UO2 + PDV2B
58	XCE2	O	UO2 + PDV2B
59	VSS1	P	VSS1
60	XCRD	O	UO2 + PDV2B
61	CA11	O	UO2 + PDV2B
62	XCIORD	O	UO2 + PDV2B
63	CA17	O	UO2 + PDV2B
64	CA9	O	UO2 + PDV2B
65	XCIOWR	O	UO2 + PDV2B
66	CA8	O	UO2 + PDV2B
67	VDD1	P	VDD1
68	F16CLK	I	IBTP
69	VSS1	P	VSS1
70	CA13	O	UO2 + PDV2B
71	CA18	O	UO2 + PDV2B
72	CA14	O	UO2 + PDV2B
73	CA19	O	UO2 + PDV2B
74	XCWR	O	UO2 + PDV2B
75	CA20	O	UO2 + PDV2B
76	CRDY	I	IBTP
77	CA21	O	UO2 + PDV2B
78	VSS1	P	VSS1
79	CA16	O	UO2 + PDV2B
80	CA22	O	UO2 + PDV2B
81	CA15	O	UO2 + PDV2B
82	CA23	O	UO2 + PDV2B
83	VDD1	P	VDD1
84	VSS1	P	VSS1
85	CA12	O	UO2 + PDV2B
86	CA24	O	UO2 + PDV2B
87	CA25	O	UO2 + PDV2B
88	CRST	O	UO2 + PDV2B
89	XPLLLK	I	IBTP
90	XRDY	O	UO2 + PDV2B
91	VSS1	P	VSS1
92	XREG	O	UO2 + PDV2B
93	BVD2	I	IBTP
94	BVD1	I	IBTP
95	CD0	I/O	UT2P + PDV2B
96	CD8	I/O	UT2P + PDV2B
97	CD1	I/O	UT2P + PDV2B
98	CD9	I/O	UT2P + PDV2B
99	CD2	I/O	UT2P + PDV2B
100	VSS1	P	VSS1
101	CD10	I/O	UT2P + PDV2B
102	CWP	I	IBTP
103	XCDET2	I	IBTP
104	RX2	I	IBTP
105	GRST	O	UO2 + PDV1B
106	XGERR	I	IBTP
107	XKSTBO	O	UO2 + PDV1B
108	XKSTB1	O	UO2 + PDV1B
109	XKSTB2	O	UO2 + PDV1B
110	XKSTB3	O	UO2 + PDV1B
111	XKIN0	I	IBTP
112	XKIN1	I	IBTP
113	XKIN2	I	IBTP
114	XKIN3	I	IBTP
115	VDD1	P	VDD1
116	VSS1	P	VSS1
117	VSS1	P	VSS1
118	XKIN4	I	IBTP
119	XTISEC	I	IBTP
120	XPWKEY	I	IBTP
121	XINT0	O	UO2 + PDV1B
122	XINT1	O	UO2 + PDV1B
123	XINT2	O	UO2 + PDV1B
124	TX2D	O	UO2 + PDV1B
125	PWROFF	O	UO2 + PDV1B
126	VDWN	I	IBTD
127	RX0OUT	O	UO2 + PDV1B
128	RX1OUT	O	UO2 + PDV1B

CIRCUIT OPERATION

1. GENERAL BLOCK DIAGRAM

The summary GENERAL BLOCK DIAGRAM is shown in Fig. 14.
This circuit can be divided mainly following 4 blocks.

1-1) GPS DIGITAL SECTION

This block executes operation based on signal from analog section and detects the present location of receiver, and holds 7 keys, LCD, buzzer, external interface (based on NMEA0183A) as method of input or output.
This block is developed in lower half of Main board and a part of Operation board.

1-2) PLOTTER SECTION

This block executes LCD display of information about satellite status, present location and self-ship movement mark, etc. based on result in GPS digital section, and controls whole this circuit. It holds 20 keys, LCD, buzzer, PCMCIA interface, external interface (based on NMEA0182A) as method of input or output.
This block is developed in lower half of Plotter board and in upper half of GPS/LCD board.

1-3) POWER SOURCE SECTION

This block controls the ON/OFF operation of power source needed for each analog and digital section.
This block is developed in Operation board and a part of Main board.

1-4) GPS ANALOG SECTION

This block executes the frequency conversion to the signal inputted through antenna from satellite, makes frequency down to be able to be processed in digital section, after that, converts it to binary signal.
This block is developed in RF board and upper half Main board (shield section).

2. GPS DIGITAL SECTION

The Block diagram of GPS digital section is shown in Fig. 15.
After dividing this section as following 3 blocks, each block is explained.
1) CPU peripheral section of GPS Section
2) satellite homing section
3) RTC (Real Time Clock) section

2-1) CPU peripheral section of GPS Section

The CPU peripheral section consists of CPU (IC301), ROM (IC303), SRAM (IC304~IC307) and the ASIC3 (IC302).
As to memory access of CPU, ASIC3 includes the address latch, address record and wait control function of CPU.
As to ROM access especially, conversion from 16 bit to 32 bit is executed by ASIC.
As showing in follow Fig., the drive clock of CPU (CI : 4MHz) is generated by dividing the fundamental clock (16MCLK : 16MHz) which is input from the analog section by 4 at ASIC. Then, CPU multiples it by 4 and returns the timing synchronous clock (PCO : 16MHz) to ASIC.
The pin location of ASIC is shown in Table 1-1.

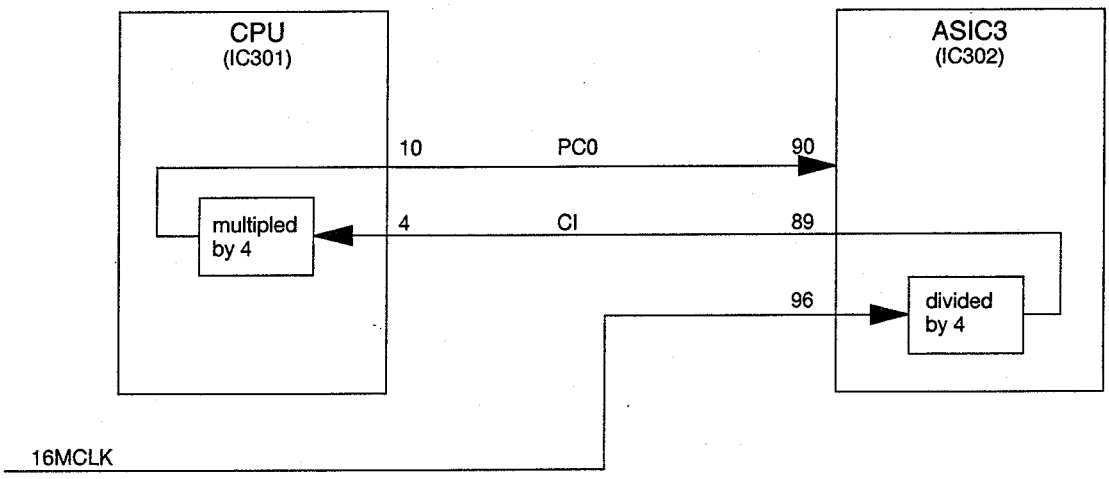


Fig. 19

2-2) satellite homing section

Based on the signal (IFDATA) which is input from the analog section, the operation necessary for satellite homing is executed in ASIC3 (IC302), and the result is translated to CPU as data using the serial link of CPU in GPS section. CPU executes the position operation based on receiving data and outputs the result to LCD.

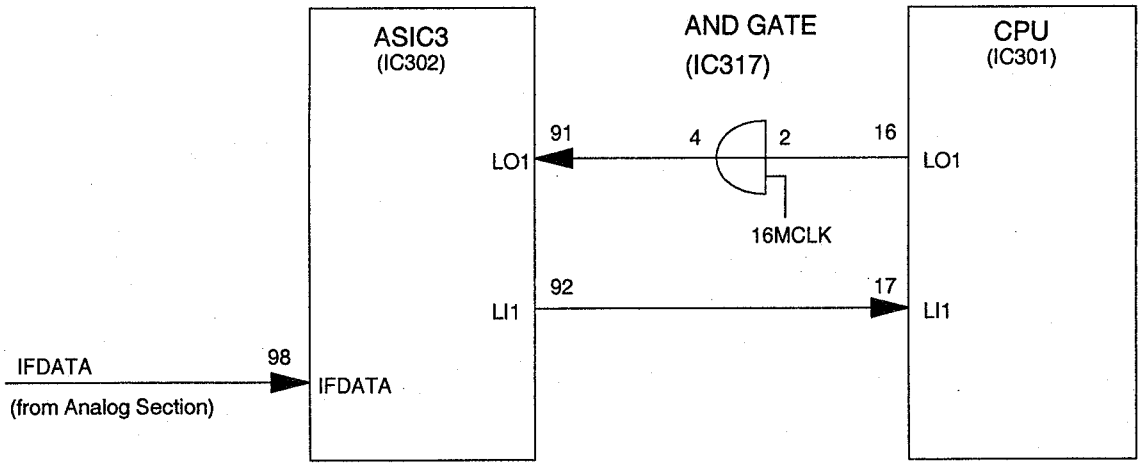


Fig. 20

2-3) RTC (Real Time Clock) Section

The Real Time Clock IC (IC309) starts the clock operation by being written the correct time which is obtained by measuring once at CPU (IC301) in GPS section. As the oscillator for clock (X301) isn't stop and keeps clock operation when the power source is OFF because the power source is connected with the backup power source (VBC). CPU can read out the correct time when the power source became ON after then.

Also, as including the speed detecting timer inside, when CPU runs away and doesn't clear in certain time, the GERR signal (low active) is output to ASIC2 (IC108) through connector (CN301/CN101) by INTO interruption. When accepting the interruption, the main CPU resets the whole GPS digital section by returning GRST signal (low active) to Real Time Clock IC.

3. PLOTTER SECTION

The Block Diagram of plotter section is shown in Fig. 16.
After dividing this section as following 8 blocks, each block is explained.

1) main CPU peripheral section
2) Power source voltage supervisory section
3) LCD control section
4) GPS serial interface control section
5) External interface control section
6) PCMCIA interface control section
7) Key control section
8) Buzzer control section

3-1) main CPU peripheral section

The main CPU peripheral section consists of CPU (IC101), ROM (IC103), SRAM (IC104, IC105), ASIC1 (IC102) and ASIC2 (IC108). ASIC1 includes functions such as the LCD control, image synthesizing and block transferring. Also, ASIC2 includes functions such as serial I/O, card control, key control and interruption control.
As showing in follow Fig., the drive clock of main CPU (CLK16M : 16MHz) is generated by driving the fundamental clock (XIN : 16MHz) which is input from the crystal oscillator (X102) at ASIC1. Then, main CPU divides it by 2 and returns the timing synchronous clock (PHI1 : 8MHz) to ASIC1 and ASIC2.
The pin location of ASIC1 and ASIC2 is shown in Table 1-2 and 1-3

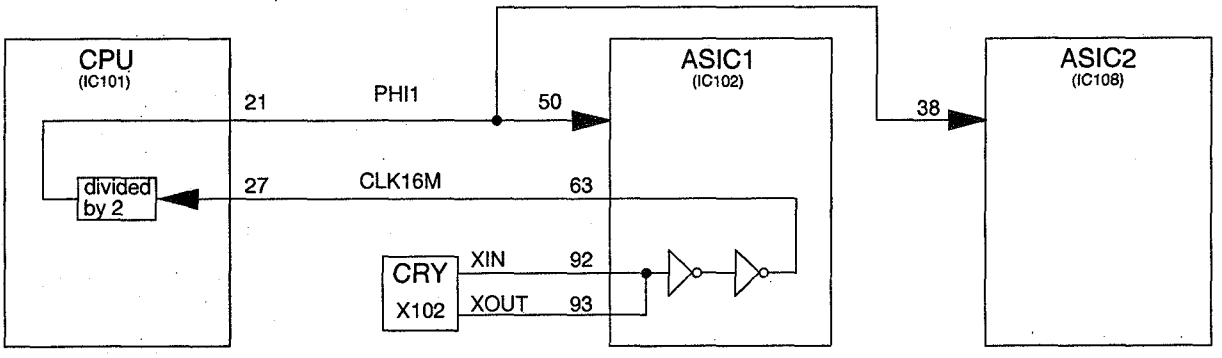


Fig. 19

3-2) Power source voltage supervisory section

The power source voltage supervisory IC (IC112) supervises the power source voltage (VPS), and includes functions which detects the power source voltage is under the reset voltage (4.0V) to resets whole system and it is under the battery mark lights voltage (4.7V) that shows the power source voltage becomes low and informs via ASIC2 to CPU.
Both the reset voltage and the battery mark light voltage can be controlled minutely by the external register of the same IC, also the reset time can be controlled as same by external capacitor.
The main CPU includes function which indicates the battery residual by A/D converting the level (VTHLVL, VPSLVL) of the power source voltage (VTH, VPS).

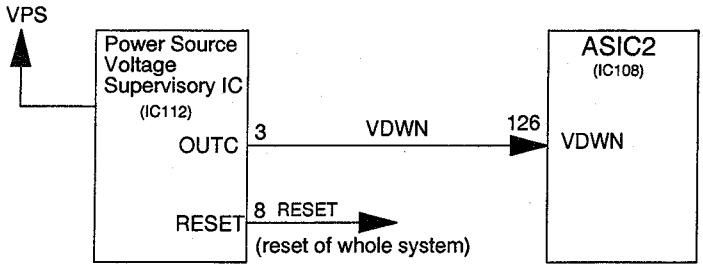


Fig. 22

3-3) LCD Control Section

The ASIC1 synthesizes the data of image C by operating data of image A and B on RAM (IC104, IC105) which is specified by main CPU and transfers it to LCD driver as DAM transfer in certain period. The LCD driver (IC310~IC315) divides the inputted synthetic data into common and segment and supplies them to LCD via the heat seal to update screen image.

The back light of LCD controls the ON/OFF operation using of the port setting from CPU.

The connections of LCD are shown in Table .

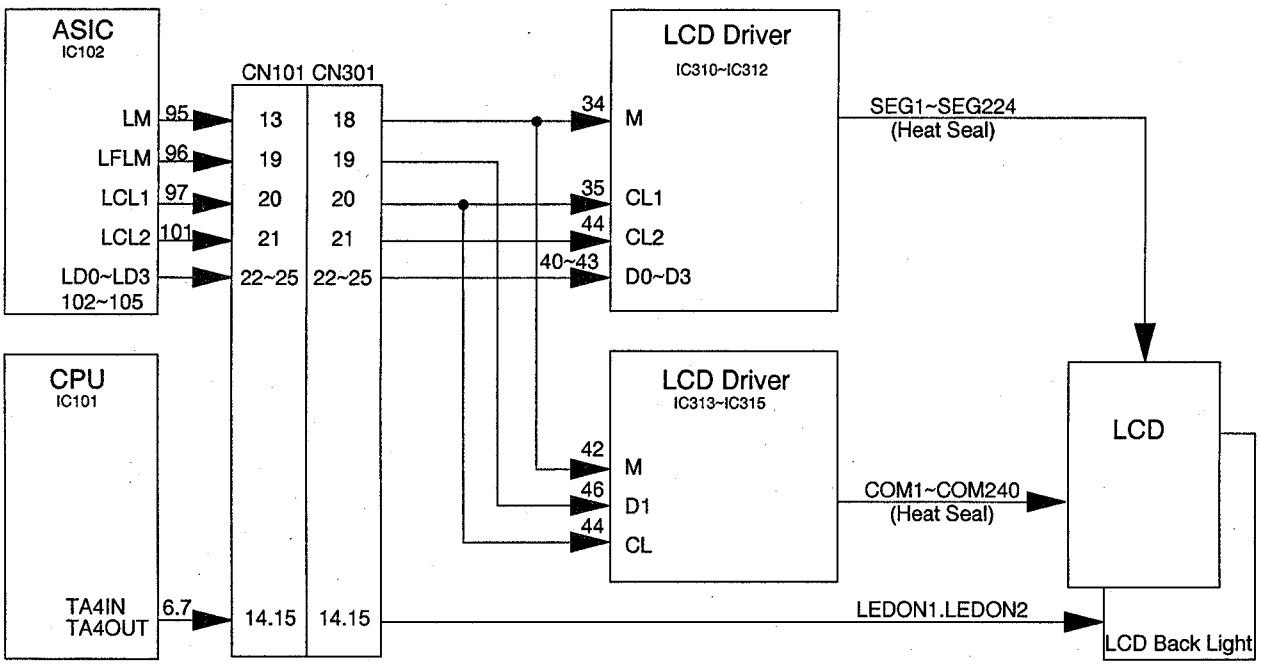


Fig. 23

3-4) GPS Serial Interface Control Section

UART2 includes 12 bite buffer (2 bite is margin) in ASIC, therefore it can accept interruption if waiting is 10msec when the transmission speed is 9600 bps.

The command output from main CPU (IC101) is executed parallel/serial conversion in ASIC2 (IC108) and transferred to GPS Digital Section by UART2, then it is read by GPS section CPU (IC301) after being executed parallel/serial conversion again in ASIC3 (IC301). In the same way, the data as measuring information etc. which is output from GPS section CPU is executed parallel/serial conversion in ASIC3 and transferred to plotter section by UART2, then it is read by main CPU after being executed parallel/serial conversion.

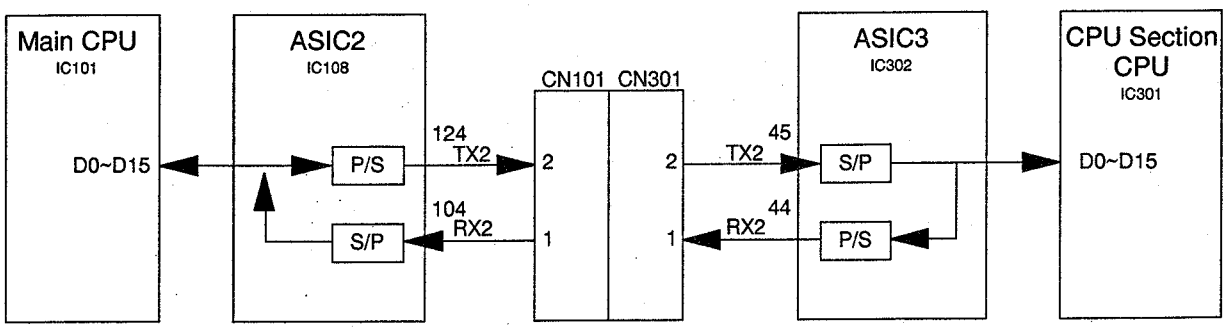


Fig. 24

3-5) External Interface Control Section

When connecting the optional interface board to connector (CN103), the serial interface base on NMEA0183A can be used. The baud rate can be input and output at 4800 bps.

The main CPU outputs serial data (TX0) to external, and ASIC2 (IC108) executes parallel-serial conversion of the data from external (RX0, RX1) and outputs to main CPU. But to make the external interface function enable, the ADPT signal (low active) must be fixed low.

The optional interface adapter fixed the ADPT signal low, and also includes the function which converts the voltage level of 3 signal lines.

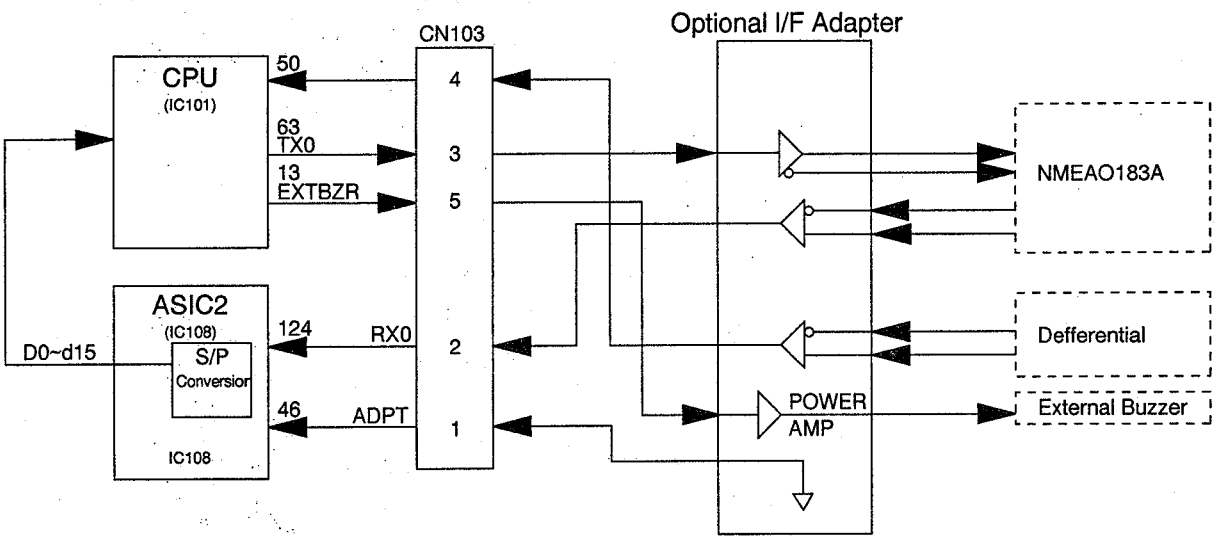


Fig. 25

3-6) PCMCIA interface control section

This block supports interface with IC memory card which is based on JEIDA standard IC memory card guide line Ver. 4.1 and I/O card. This standard corresponds to PCMCIA Ver. 2.0.

KX-G5700 corresponds following 4 cards.

SRAM card : for expansion of internal memory

NAVIONICS card: sea chart

If card is included, ASIC2 detects the condition because the card detecting signal CDET1, CDET2 are low level and outputs the interrupt signal INTO to the main CPU. If interruption is input, the main CPU judges existing or no-existing and kind of the card by reading the card status resister.

If the card is based on PCMCIA standard (SRAM card), the power source of card is switched output of rate-of-climb regulator and keeps 5V±5%.

If it's NAVIONICS card, 2 pins must be replaced in following because it isn't based on PCMCIA standard.

Normal card		NAVIONICS	
IORD	⟶	A1	
IOWR	⟶	A16	PCMCIA Interface

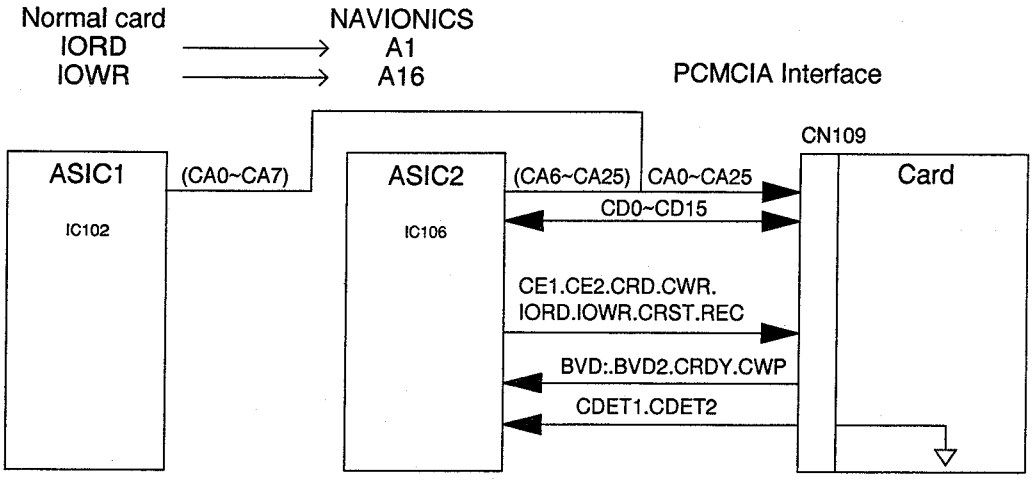


Fig. 26

3-7) Key control section

The power source of system is controlled with key S320 on GPS/LCD board. When the power source is ON, CPU always senses the key condition via POKEYOUT signal.

The other 19 keys composes 5×4 strobe key matrix, and these strobe signals output the interruption signal INTO to main CPU if the key condition is changed after being excepted chattering in ASIC2. If the interruption signal is input, the main CPU reads key status register to judge status-changed keys.

Also, the back light of key is controlled ON/OFF operation with the port setting of CPU.

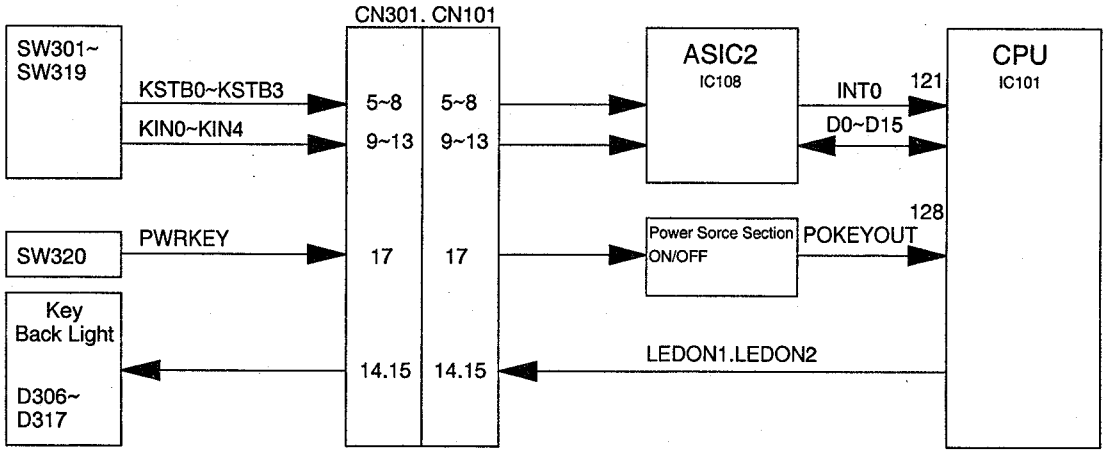


Fig. 27

3-8) Buzzer control section

The buzzer signal is controlled ON/OFF operation by CPU. The sound pressure is controlled in 2 phases by switching oscillation frequency (High : 4KHz, Low : 3KHz).

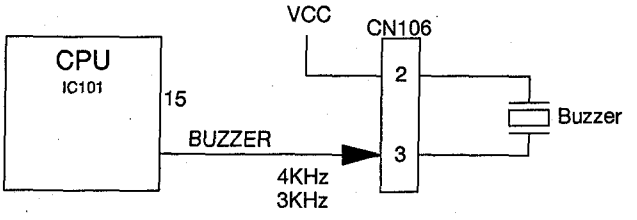


Fig. 28

4. POWER SOURCE SECTION

The block diagram of power source section is shown in Fig. 17.
The power source section circuit is developed in a part of plotter board, the power source is supplied by installing battery pack (Ni-H battery pack, AA Alkaline Battery pack or external interface adapter) to main unit.
After dividing this section as following 9 blocks, each block is explained.

1) VPS (main power source) control section
2) VCC (plotter section power source) control section
3) VBC (plotter section backup power source) control section
4) VCC2 (GPS digital section power source) control section
5) VA1•VA2 (GPS analog section power source) control section
6) VBC2 (GPS digital section backup power source) control section
7) VCC3 (LCD section power source) control section
8) VEE (negative power source) control section

4-1) VPS (main power source) control section

This is 5V system output of battery pack, VCC and all other power sources are generated from this VPS.
When installing AA Alkaline Battery pack, if low level is input to PWRKEY signal which executes ON/OFF operation of system power source, the REGON signal becomes low level which executes ON/OFF operation of regulator of battery pack and VPS (5V) is supplied from battery pack, also if high level is input to PWROFF signal, the REGON signal becomes high level and VPS becomes OFF. At this time, the backup power source is supplied from VTH to VPS. The high level is input to VPSCTL signal which controls if VPS is supplied directly from VTH or not, VPS is supplied directly from VTH, the REGON signal becomes high level and VPS becomes OFF. If VPS becomes under 2V, the REGON signal becomes high level and VPS becomes OFF.
When installing Ni-H battery pack, VPS (5V) is always supplied from Ni-H battery pack.

Circuit Diagram

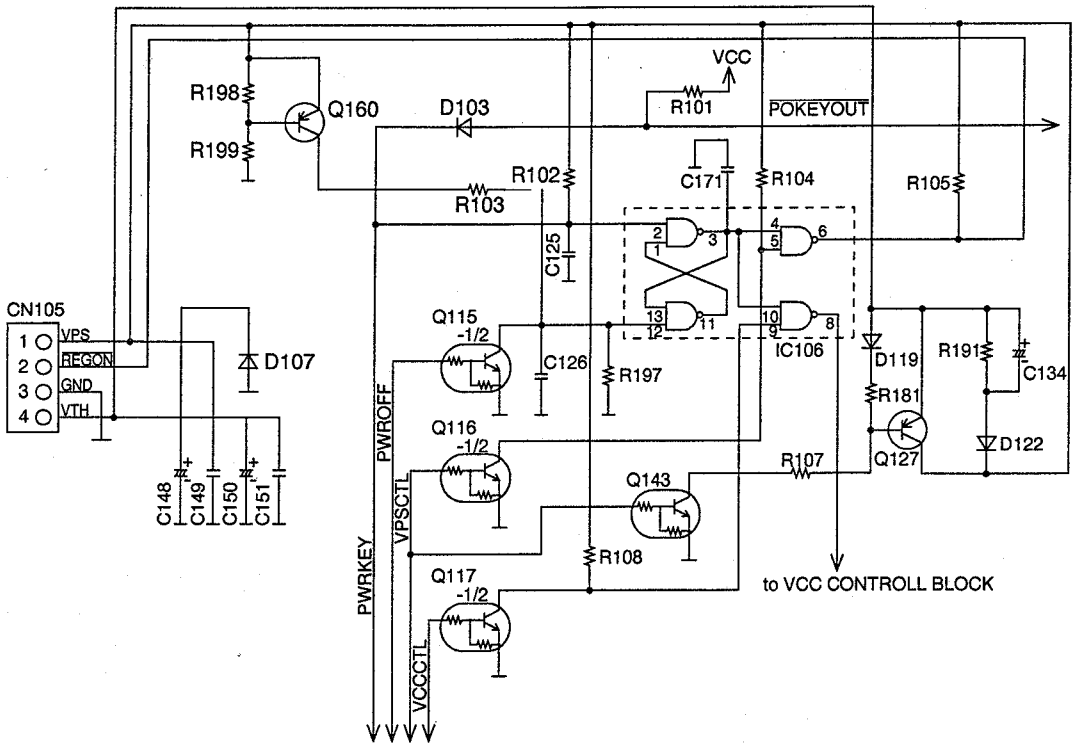


Fig. 29

4-2) VCC (plotter section power source) control section

This is main power source of plotter section and drives CPU of plotter, ROM and ASIC.

If high level is input to PWRKEY signal, VCC (5V±10%) is generated from VPS. And if high level is input to PWROFF signal, VCC becomes OFF.

If high level is input to VCCCTL2 signal which controls ON/OFF operation of the rate-of-climb pressure regulator, it starts driving, further if high level is input to VCCCTL signal which selects VCC precision (±10% or ±5%), the output of rate-of-climb pressure regulator is supplied to VCC, therefore it becomes VCC ±5% precision.

Circuit Diagram

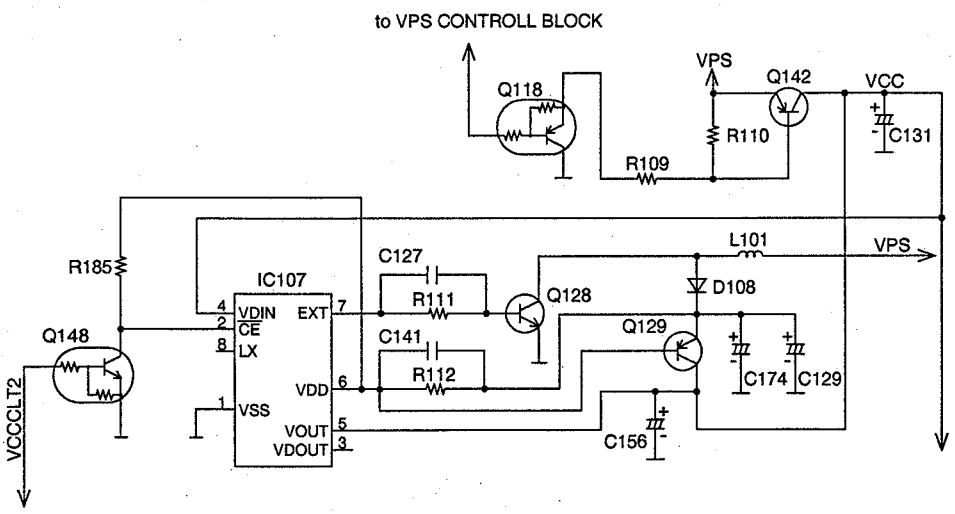


Fig. 30

4-3) VBC (plotter section backup power source) control section

This is plotter section backup power source and drives SRAM of plotter section. When power source is ON, it is generated from VCC (5V), and when power source is OFF, it is backuped by VTH via VPS (3V). When connecting no battery pack, it is backuped by VLB (3V).

Circuit Diagram

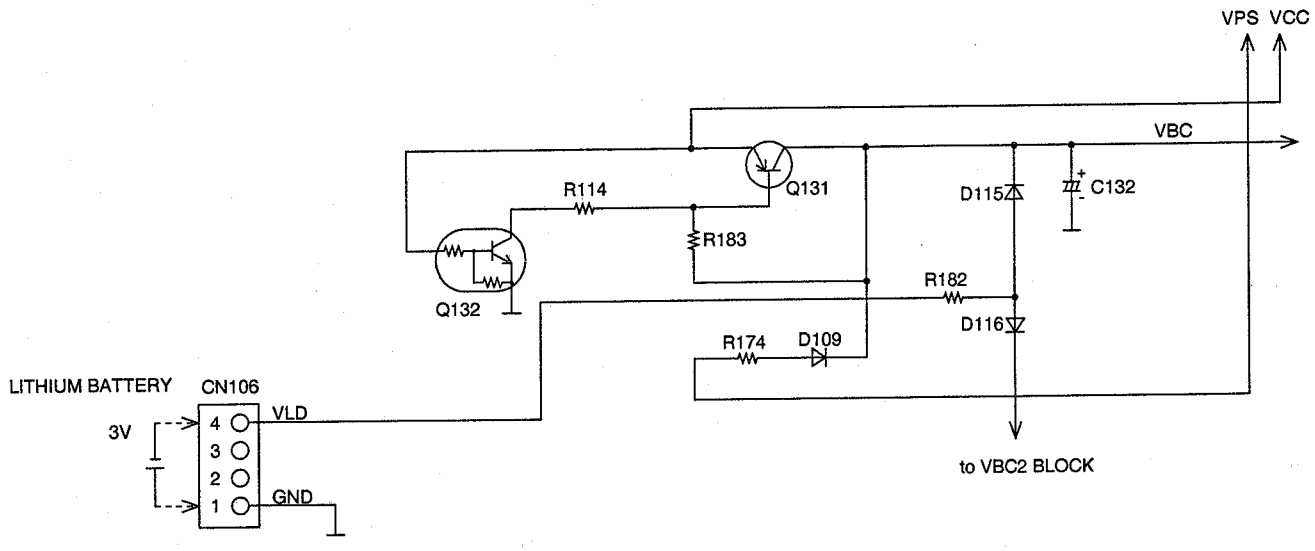


Fig. 31

4-4) VCC2 (GPS digital section power source) control section

This is GPS digital section power source. It drives CPU of GPS digital section, ROM and ASIC and becomes origin of GPS analog section power source.

If high level is input to GPSON signal, it is generated from VPS (5V), and if low level is input, it becomes off.

Circuit Diagram

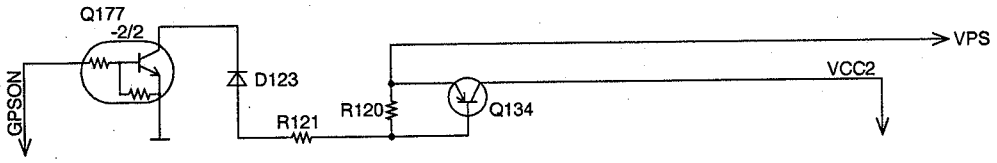


Fig. 32

4-5) VA1•VA2 (GPS analog section power source) control section

This is GPS analog section power source.

If high level is input to GPSON signal, it is generated by regulating VCC2 (4V), and if low level is input, it becomes OFF.

Circuit Diagram

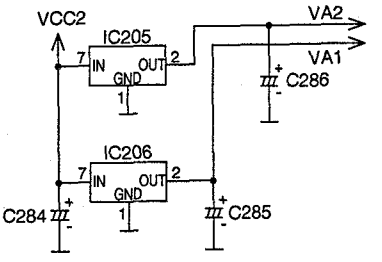


Fig. 33

4-6) VBC2 (GPS digital section backup power source) control section

This is GPS digital section backup power source and drives SRAM and RTC of GPS digital section. When power source is ON, it is generated from VPS (5V), and if power source is OFF, it is backuped by VTH via VPS (2V). When connecting no battery pack, it is backuped by VLB (2V).

Circuit Diagram

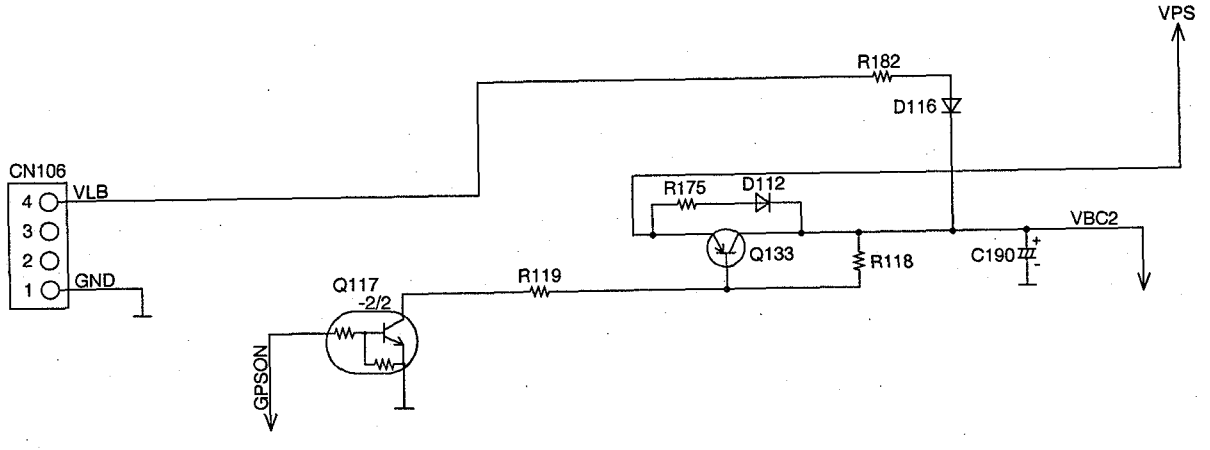


Fig. 34

4-7) VCC3 (LCD section power source) control section

This is LCD section power source and drives LCD driver of plotter section.

If high level is input to PWRKEY signal, it is generated by regulating VPS (4V), and if high level is input to PWROFF signal, it becomes OFF.

Circuit Diagram

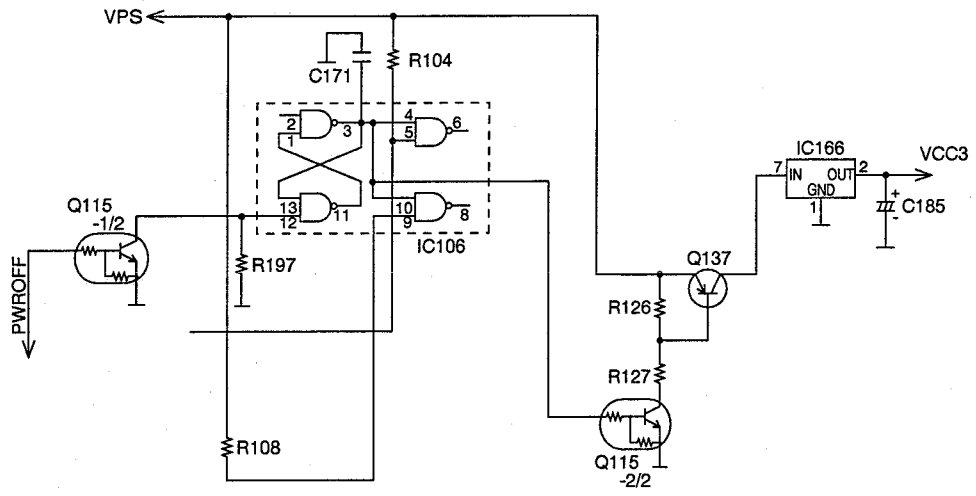


Fig. 35

4-8) VEE (negative power source) control section

This is negative power source for LCD and drives LCD driver of plotter section.

If high level is input to PWRKEY signal, it is generated from VPS (-15~17V), and if high level is input to PWROFF signal, it becomes OFF. Also, the VEE level can be controlled in range -14~18V by changing of input pattern to LCNT0~LCNT3.

Circuit Diagram

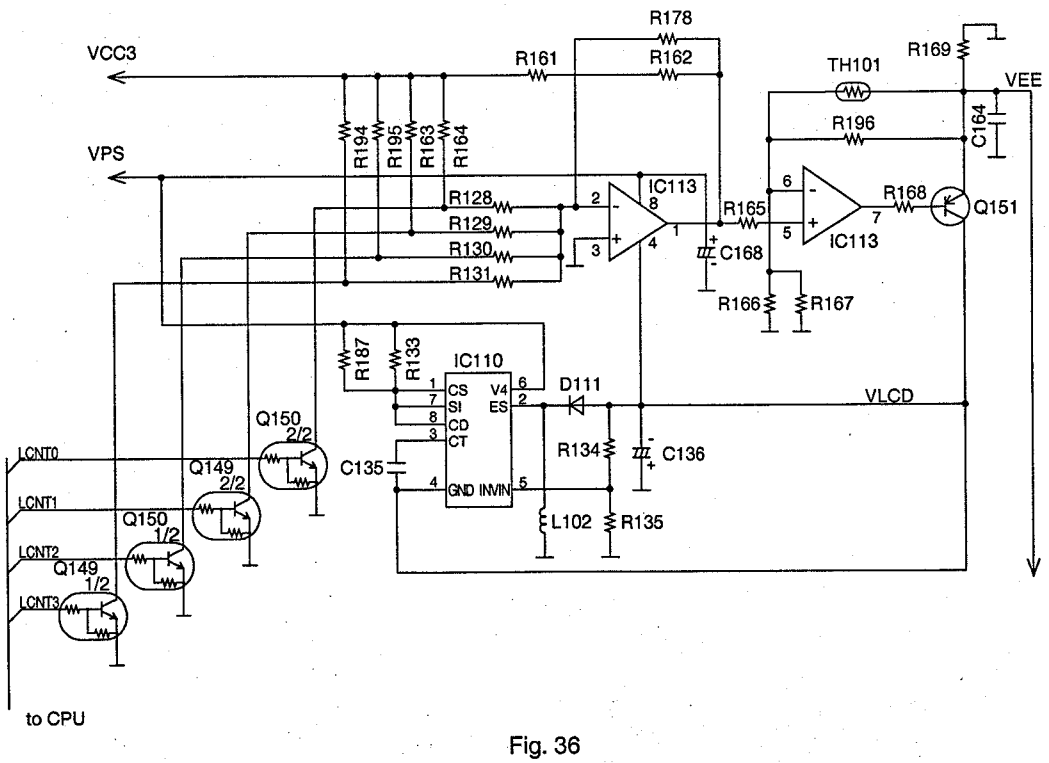


Fig. 36

5. GPS ANALOG SECTION

The block diagram of analog section is shown in Fig. 18. The analog section consists of following 6 blocks.

1) Antenna
2) RF amplifier
3) 1st IF circuit
4) 2nd IF circuit
5) Reference signal divider circuit
6) 1st Local signal generator circuit

The power source of analog section supplies VA1 to the 1st Local signal generator circuit and the reference signal divider circuit except the local amp, and VA2 to the 1st IF circuit, the 2nd IF circuit and the local amp.

5-1) Antenna

Use the square patch antenna to receive the GPS satellite electric wave of 1575.42 MHz carrier frequency and output on RF board.

5-2) RF amplifier

The RF amplifier consists of 4-phases amp and BPF filter. The RF signal which is input from antenna is amplified by the wide band low noise amp (Q201) and RF amp (Q202), then narrowed the band pass 1575. 42 ±1.023 MHz (within 3dB attenuation band ±15MHz) by the band pass filter (F301), after that amplified by RF amp (Q203, Q213) in the following stage.

Circuit Diagram

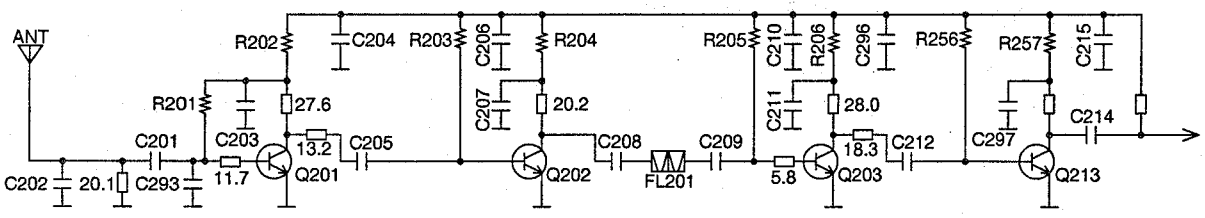


Fig. 37

5-3) 1st IF circuit

As the 1st mixer (Q204), the dual gate EFT is used. The source of FET is resistance grounded (R210) and applied to about -9V auto-bias.

By inputting the RF signal which is amplified to gate 1, and injecting 1st local signal (1557.006 MHz, 0 dBm) to gate2, the 1st IF signal which is converted into frequency of 18.414 MHz is gained in drain. After the band limit of 18.414 MHz ±1 MHz is applied to the 1st IF signal by IFT (FL203), the 1st IF signal is amplified by 1st IF amp (Q205) which is emitter grounded.

Circuit Diagram

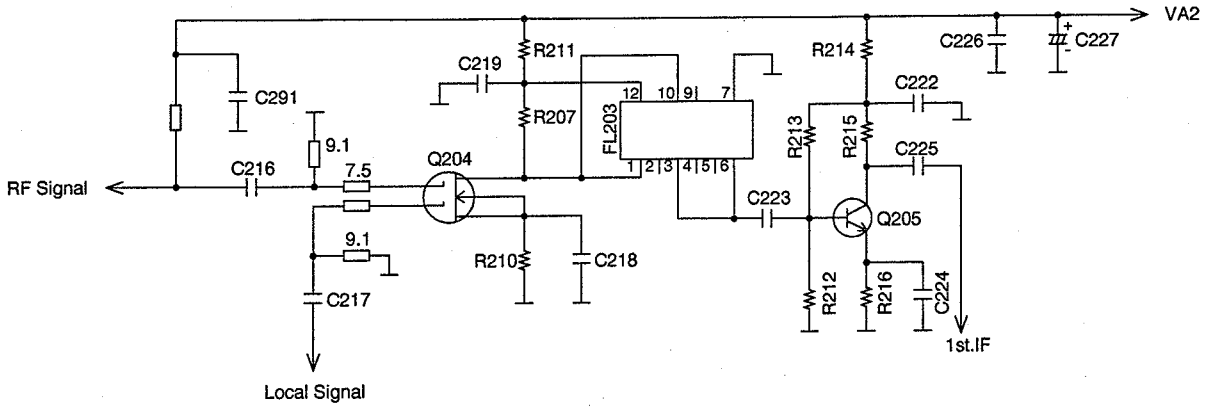


Fig. 38

5-4) 2nd IF circuit

As the 2nd IF circuit, CXA1293 (IC203) which contained a mixer, IF amp and limiter amp is used. The 2nd Local signal of 16.368 MHz is inputted to OSCIN terminal (3p) and the 1st IF signal is inputted to MIXIN terminal (7p), the 2nd IF signal of 2.046 MHz is gained in MIXOUT terminal (24p). The 2nd IF signal attenuates the 2nd Local signal which is leaking via LPF (C265, L212, C266) with cut-off frequency of 5MHz, and then amplify it by inputting to AMPIN terminal (22p). After the 2nd IF signal which is output from AMPOUT terminal (20p) is passes through LPF (L213, C268, C269), input it to LIMITIN terminal (18p). The about 6 Vp-p output of LIMITOUT terminal (14p) is made binary by the wave form shapor (IC204), hence the digital signal (IFDATA) that low level is less than 0.8V and high level is more than 2V, is output to ASIC (IC302).

Circuit Diagram

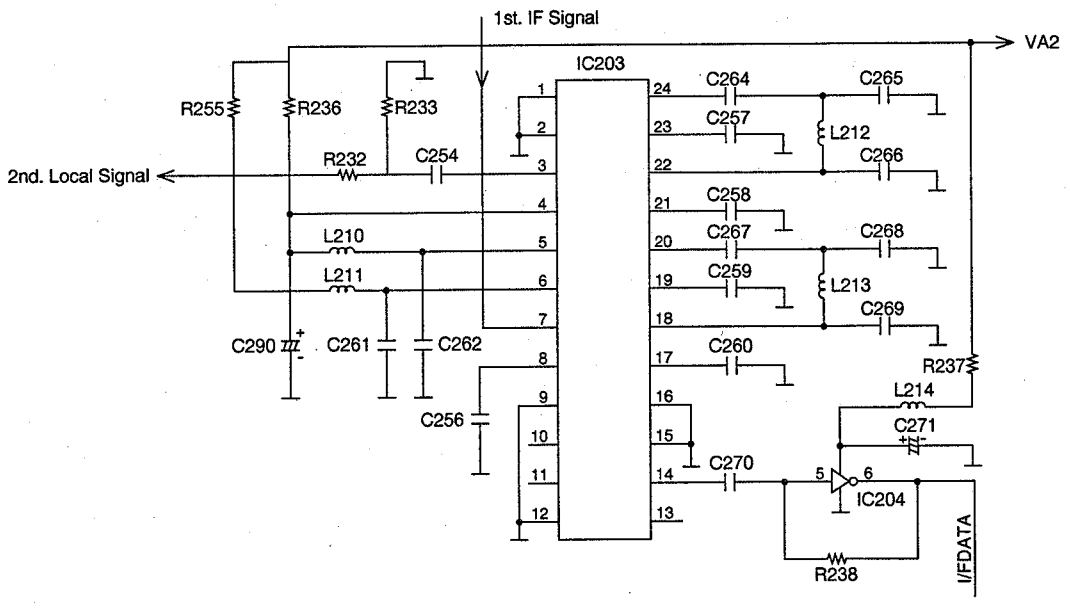


Fig. 39

5-5) Reference signal divider circuit

The signal of 16.368 MHz which is generated by the temperature compensating oscillator (X201) is divided by inverter (IC201), the standard signal of 2 Vp-p is output, and the 2nd Local signal of 3 Vp-p is output to CXA1293 (IC203). And then, the clock (F16MCK) that low level is less than 0.8V and high level is more than 2v is output to ASIC (IC302).

Circuit Diagram

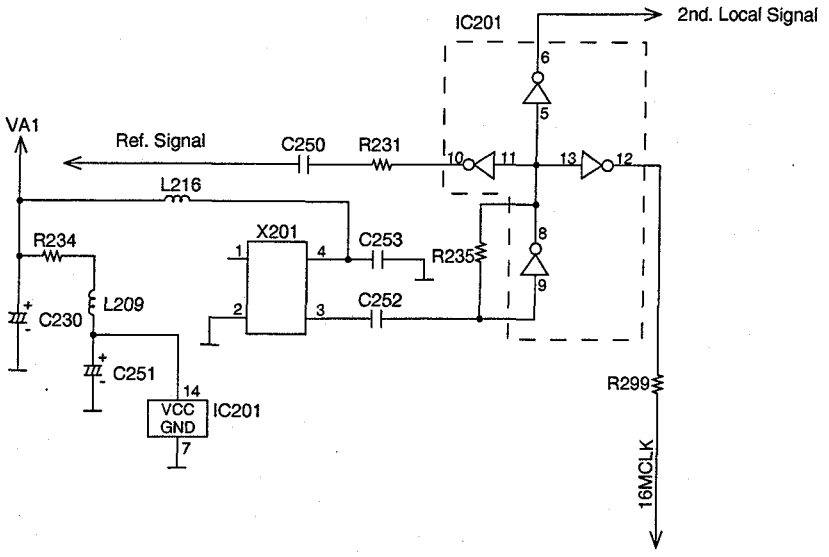


Fig. 40

5-6) 1st. Local signal generator circuit

The 1st Local signal generator circuit consists of PLL circuit, VCO buffer amp, 2-stage 2 multipliers, BPF and a local amp. PLL circuit consists of PLL-IC (IC202) which contains a prescaler and a phase comparator, the low pass filter and a variable capacitor (D201) in discrete, SAW resonator (X202), transistor (Q211). IC201 compares the phase of reference signal of 16.368 MHz which is input to REFIN terminal (15p) with the prescaler output, then output the result of phase comparation from CP terminal (6p). The CP output is multiplied by the low pass comparison from CP terminal (6p). The CP output is multiplied by the low pass filter and the feedback voltage is given to variable capacitor (D201). The VCO which contains a variable capacitor, SAW oscillator, C277 and Q211 for feed back, is oscillated to output to PLL-IC (IC202) and 1/4 Local signal generator circuit (Q210) via VCO buffer amp by dividing amp. When PLL circuit is locked in, the 1/4 Local signal of 389.2515 MHz •-8 dBm is gained at VCO. The 1/4 Local signal is multiplied to 1557.006 MHz Local signal using 2 stage 2 multipliers (Q209, Q208) via 1/4 Local signal amp, limited the band by BPF (FL202) of 1557.006 MHz, amplified to 0 dBm by local amp (Q207), But the ripple filter (Q206) is inserted at the front place of Vvco terminal (4p) of IC202.

Circuit Diagram

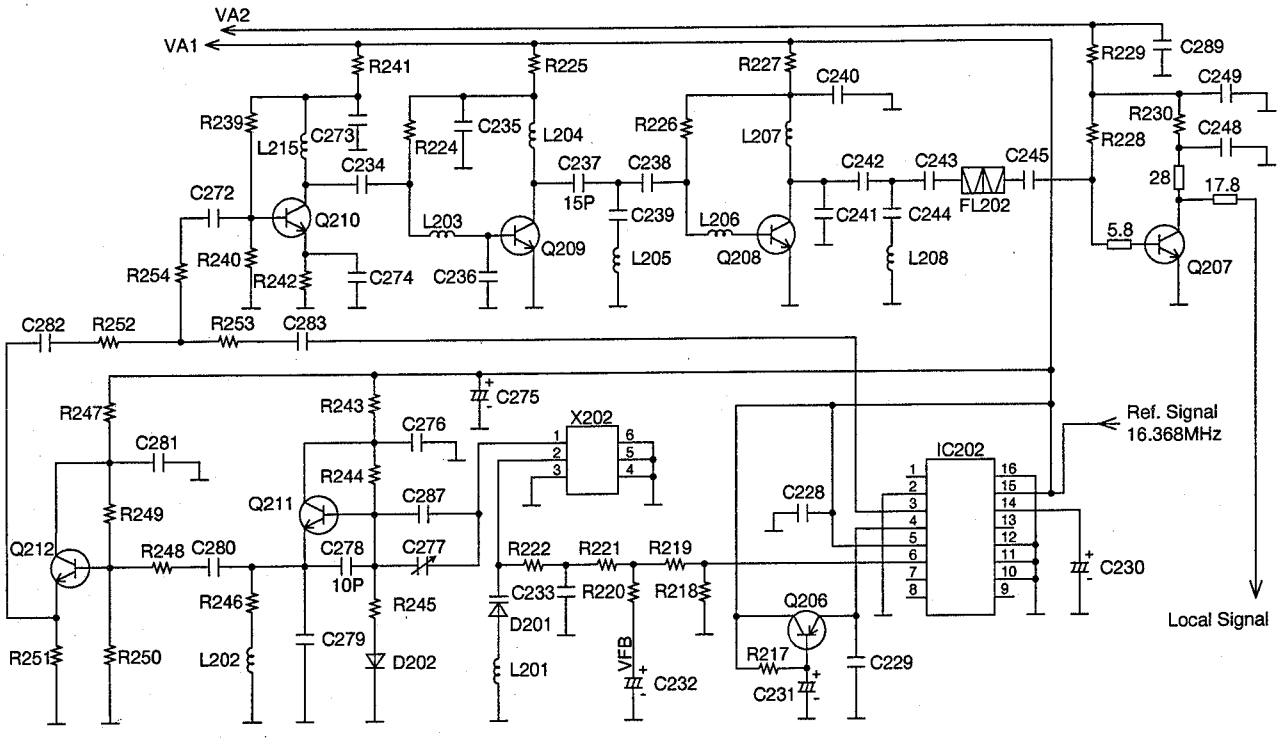


Fig. 41

CONNECTOR PINS LOCATION

CN101-CN301 (Main Interface)

No.	Signal	Type	Function
1	RX2	plotter←GPS/LCD	GPS Digital Section Serial Data Input
2	TX2	plotter→GPS/LCD	GPS Digital Section Serial Data Input
3	$\overline{\text{GRST}}$	plotter→GPS/LCD	GPS Section Reset Signal
4	$\overline{\text{GERR}}$	plotter←GPS/LCD	GPS Section Error Signal
5	$\overline{\text{KSTB0}}$	plotter←GPS/LCD	Key Strobe Signal
6	$\overline{\text{KSTB1}}$	plotter←GPS/LCD	Key Strobe Signal
7	$\overline{\text{KSTB2}}$	plotter←GPS/LCD	Key Strobe Signal
8	$\overline{\text{KSTB3}}$	plotter←GPS/LCD	Key Strobe Signal
9	$\overline{\text{KIN0}}$	plotter←GPS/LCD	Key Strobe Signal
10	$\overline{\text{KIN1}}$	plotter←GPS/LCD	Key Strobe Signal
11	$\overline{\text{KIN2}}$	plotter←GPS/LCD	Key Strobe Signal
12	$\overline{\text{KIN3}}$	plotter←GPS/LCD	Key Strobe Signal
13	$\overline{\text{KIN4}}$	plotter←GPS/LCD	Key Strobe Signal
14	LEDON1	plotter→GPS/LCD	LCD, Key Back Write Control Signal
15	LEDON2	plotter→GPS/LCD	LCD, Key Back Write Control Signal
16	$\overline{\text{T1SEC}}$	plotter←GPS/LCD	Interrupt Signal from RTC
17	PWRKEY	plotter←GPS/LCD	Power Key Signal
18	LM	plotter→GPS/LCD	
19	LFLM	plotter→GPS/LCD	First Line Marker
20	LCL1	plotter→GPS/LCD	Line Clock
21	LCL2	plotter→GPS/LCD	Data Clock
22	LD0	plotter→GPS/LCD	LCD Data
23	LD1	plotter→GPS/LCD	LCD Data
24	LD2	plotter→GPS/LCD	LCD Data
25	LD3	plotter→GPS/LCD	LCD Data
26	VCC3	plotter→GPS/LCD	LCD Power Source
27	VCC3	plotter→GPS/LCD	LCD Power Source
28	VBC2	plotter→GPS/LCD	GPS Digital Section backup power source
29	VCC2	plotter→GPS/LCD	GPS Section power source
30	VCC2	plotter→GPS/LCD	GPS Section power source
31	VPS	plotter→GPS/LCD	Main Power Source
32	VPS	plotter→GPS/LCD	Main Power Source
33	VEE	plotter→GPS/LCD	Negative Power Source

No.	Signal	Type	Function
34	GND	plotter→GPS/LCD	Ground
35	16 MCLK	plotter→GPS/LCD	16MHz Clock for Serial Communication
36	GND	plotter→GPS/LCD	Ground
37	IF DATA	plotter→GPS/LCD	IF DATA IF Data Signal
38	GND	plotter→GPS/LCD	Ground
39	GND	plotter→GPS/LCD	Ground
40	$\overline{\text{DISPOFF}}$	plotter→GPS/LCD	Display Off Signal

CN103 (External Interface)

No.	Signal	Type	Function
1	$\overline{\text{ADPT}}$	plotter←external I/F	Adapter Detecting Signal
2	RX0	plotter←external I/F	External I/F Serial Data Input
3	TX0	plotter→external I/F	External I/F Serial Data Output
4	RX1	plotter←external I/F	Differential Data Input
5	EXTBZR	plotter→external I/F	External Buzzer Control Signal

CN105 (Power Source Section Interface)

No.	Signal	Type	Function
1	VPS	plotter←BATT	Main Power Source
2	$\overline{\text{REGON}}$	plotter→BATT	Battery Pack Regurator
3	GND	plotter←BATT	Ground
4	VTH	plotter←BATT	Power Source for Thermal head

CN109 (PCMCIA Interface)

NO.	Signal	Type	Operation
1	GND	plotter ——> card	Ground
2	CD3	plotter <——> card	Card Data
3	CD4	plotter <——> card	Card Data
4	CD5	plotter <——> card	Card Data
5	CD6	plotter <——> card	Card Data
6	CD7	plotter <——> card	Card Data
7	$\overline{CE1}$	plotter ——> card	Card enable signal
8	CA10	plotter ——> card	Card address
9	$\overline{CRD}$	plotter ——> card	Card leading signal
10	CA11	plotter ——> card	Card address
11	CA9	plotter ——> card	Card address
12	CA8	plotter ——> card	Card address
13	CA13	plotter ——> card	Card address
14	CA14	plotter ——> card	Card address
15	$\overline{CWR}$	plotter ——> card	Card light signal
16	CRDY	plotter ——> card	Card ready signal
17	VCC	plotter ——> card	Plotter section power source
18	VCC	plotter ——> card	Plotter section power source
19	CA16	plotter ——> card	Card address
20	CA15	plotter ——> card	Card address
21	CA12	plotter ——> card	Card address
22	CA7	plotter ——> card	Card address
23	CA6	plotter ——> card	Card address
24	CA5	plotter ——> card	Card address
25	CA4	plotter ——> card	Card address
26	CA3	plotter ——> card	Card address
27	CA2	plotter ——> card	Card address
28	CA1	plotter ——> card	Card address
29	CA0	plotter ——> card	Card address
30	CD0	plotter <——> card	Card Data
31	CD1	plotter <——> card	Card Data
32	CD2	plotter <——> card	Card Data
33	CWP	plotter <—— card	Card light protecting signal
34	GND	plotter ——> card	Ground
35	GND	plotter ——> card	Ground
36	$\overline{CDET1}$	plotter <—— card	Card detecting signal
37	CD11	plotter <——> card	Card Data
38	CD12	plotter <——> card	Card Data
39	CD13	plotter <——> card	Card Data
40	CD14	plotter <——> card	Card Data
41	CD15	plotter <——> card	Card Data
42	$\overline{CE2}$	plotter ——> card	Card enable signal
43	NC		No connect
44	$\overline{CIORD}$	plotter ——> card	I/O Card leading signal
45	$\overline{CIOWR}$	plotter ——> card	I/O Card lighting signal
46	CA17	plotter ——> card	Card address
47	CA18	plotter ——> card	Card address
48	CA19	plotter ——> card	Card address
49	CA20	plotter ——> card	Card address
50	CA21	plotter ——> card	Card address

CN109 (PCMCIA Interface) No.2

No.	Signal	Type	Function
51	VCC	plotter→card	Plotter Section Power Source
52	VCC	plotter→card	Plotter Section Power Source
53	CA22	plotter→card	Card Address
54	CA23	plotter→card	Card Address
55	CA24	plotter→card	Card Address
56	CA25	plotter→card	Card Address
57	NC		No Connect
58	CRST	plotter→card	Card Reset Signal
59	$\overline{\text{READY}}$	plotter→card	Ready Signal
60	$\overline{\text{INPACK}}$	plotter→card	Input Response Signal
61	$\overline{\text{REG}}$	plotter→card	Attribute Selecting Signal
62	BVD2	plotter←card	Battery Voltage Detecting Signal
63	BVD1	plotter←card	Battery Voltage Detecting Signal
64	CD8	plotter←→card	Card Data
65	CD9	plotter←→card	Card Data
66	CD10	plotter←→card	Card Data
67	$\overline{\text{CDET2}}$	plotter←card	Card Detecting Signal
68	GND	plotter→card	Ground

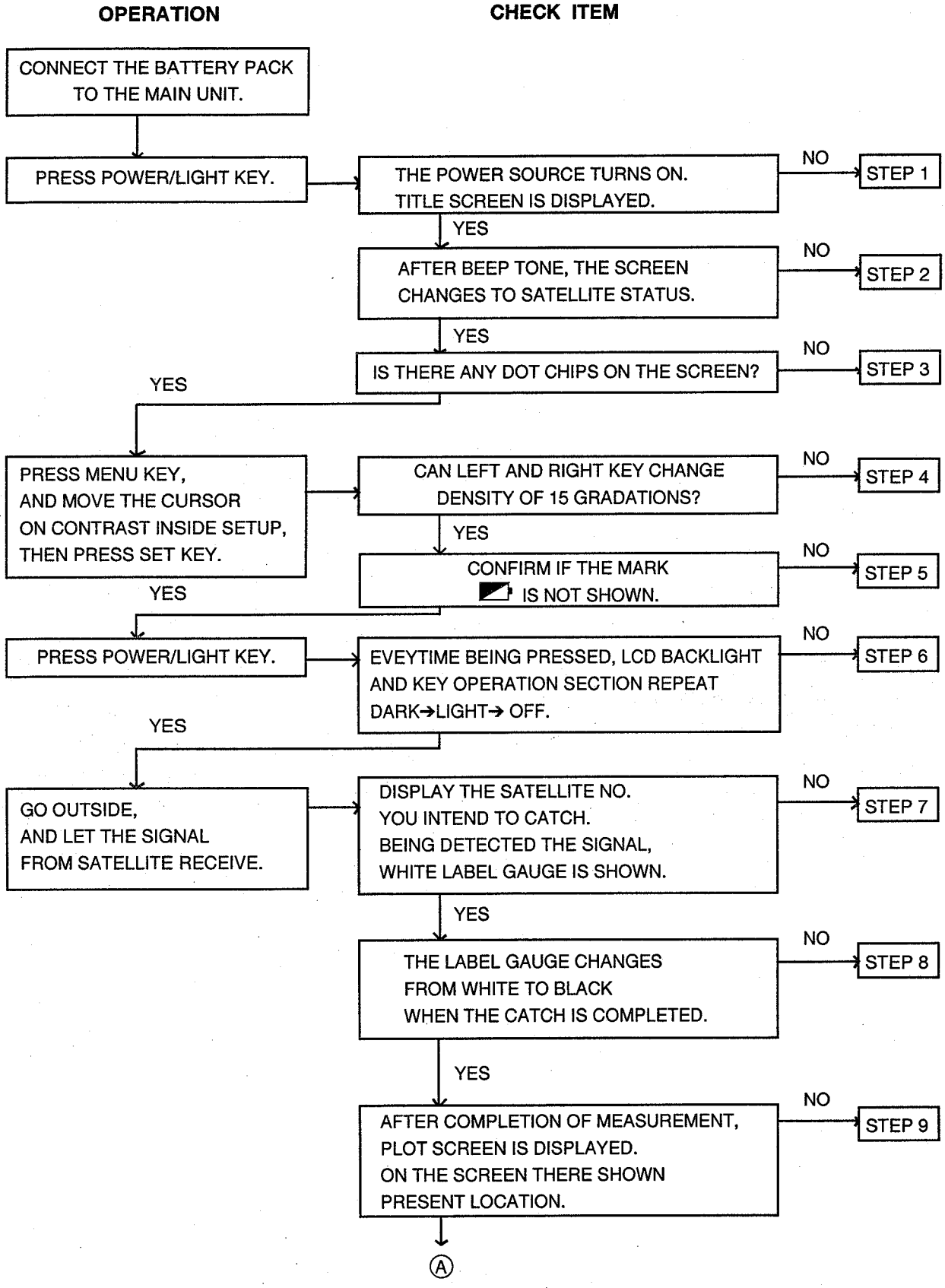
CN106 (Buzzer,Battery backup Interface)

No.	Signal	Type	Function
1	VLB	plotter←BZR, Li	Li Battery Backup Power Source
2	RZR	plotter→BZR, Li	Buzzer Control Signal
3	VCC	plotter→BZR, Li	Plotter Section Power Source
4	GND	plotter→BZR, Li	Ground

CN201-CN204 (Antenna Section Interface)

No.	Signal	Type	Function
1	ANTOUT	plotter←LNA	Antenna Recepting Signal
2	GND	plotter→LNA	Ground

TROUBLESHOOTING GUIDE


OPERATION
CHECK ITEM
CONNECT THE BATTERY PACK TO THE MAIN UNIT.
PRESS POWER/LIGHT KEY.
THE POWER SOURCE TURNS ON. TITLE SCREEN IS DISPLAYED.
NO
STEP 1
YES
AFTER BEEP TONE, THE SCREEN CHANGES TO SATELLITE STATUS.
NO
STEP 2
YES
IS THERE ANY DOT CHIPS ON THE SCREEN?
NO
STEP 3
YES
PRESS MENU KEY, AND MOVE THE CURSOR ON CONTRAST INSIDE SETUP, THEN PRESS SET KEY.
CAN LEFT AND RIGHT KEY CHANGE DENSITY OF 15 GRADATIONS?
NO
STEP 4
YES
CONFIRM IF THE MARK IS NOT SHOWN.
NO
STEP 5
YES
PRESS POWER/LIGHT KEY.
EVEYTIME BEING PRESSED, LCD BACKLIGHT AND KEY OPERATION SECTION REPEAT DARK→LIGHT→ OFF.
NO
STEP 6
YES
GO OUTSIDE, AND LET THE SIGNAL FROM SATELLITE RECEIVE.
DISPLAY THE SATELLITE NO. YOU INTEND TO CATCH. BEING DETECTED THE SIGNAL, WHITE LABEL GAUGE IS SHOWN.
NO
STEP 7
YES
THE LABEL GAUGE CHANGES FROM WHITE TO BLACK WHEN THE CATCH IS COMPLETED.
NO
STEP 8
YES
AFTER COMPLETION OF MEASUREMENT, PLOT SCREEN IS DISPLAYED. ON THE SCREEN THERE SHOWN PRESENT LOCATION.
NO
STEP 9
Ⓐ

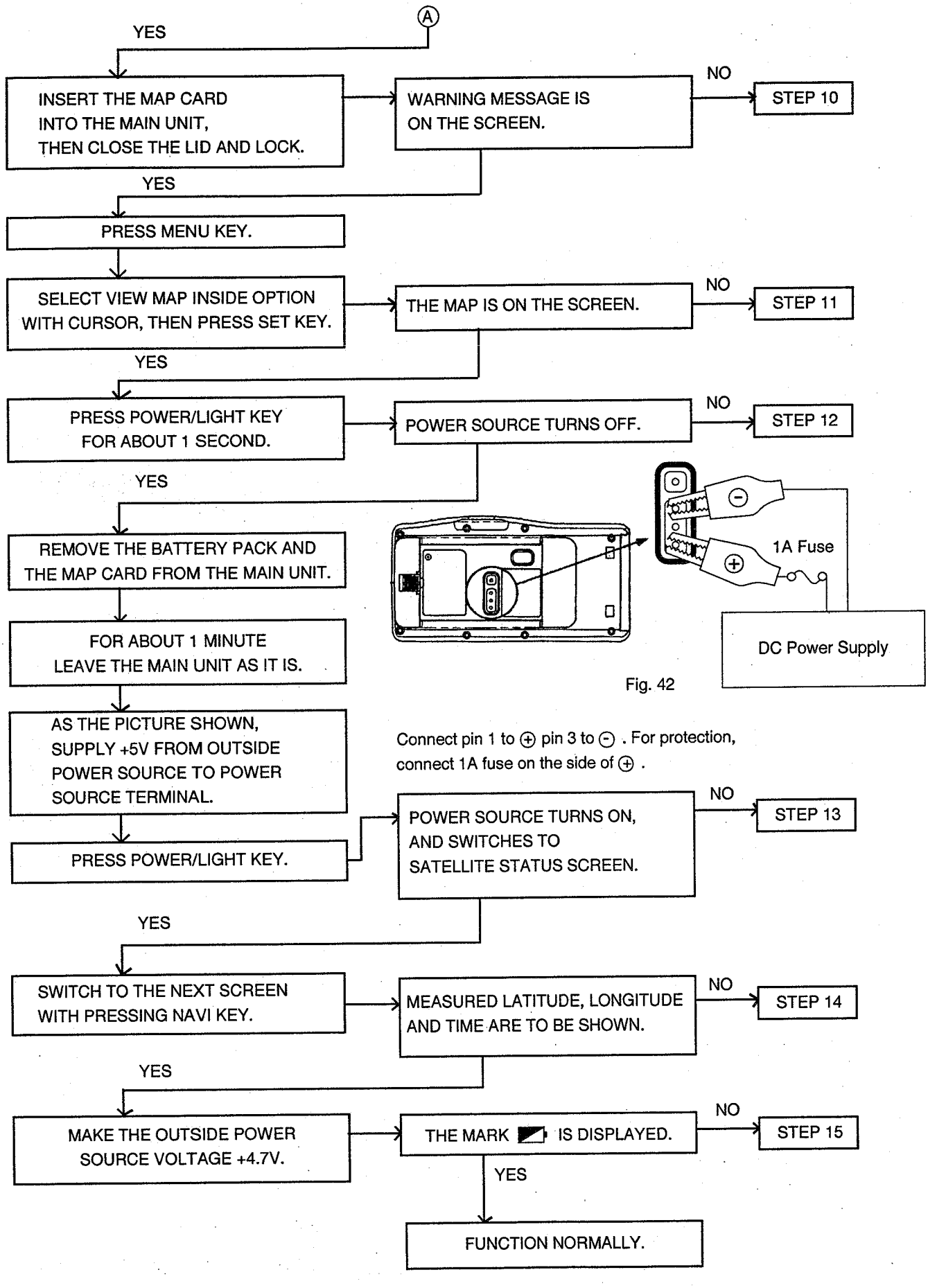

Ⓐ
YES
INSERT THE MAP CARD INTO THE MAIN UNIT, THEN CLOSE THE LID AND LOCK.
WARNING MESSAGE IS ON THE SCREEN.
NO
STEP 10
YES
PRESS MENU KEY.
SELECT VIEW MAP INSIDE OPTION WITH CURSOR, THEN PRESS SET KEY.
THE MAP IS ON THE SCREEN.
NO
STEP 11
YES
PRESS POWER/LIGHT KEY FOR ABOUT 1 SECOND.
POWER SOURCE TURNS OFF.
NO
STEP 12
YES
REMOVE THE BATTERY PACK AND THE MAP CARD FROM THE MAIN UNIT.
FOR ABOUT 1 MINUTE LEAVE THE MAIN UNIT AS IT IS.
AS THE PICTURE SHOWN, SUPPLY +5V FROM OUTSIDE POWER SOURCE TO POWER SOURCE TERMINAL.
PRESS POWER/LIGHT KEY.
POWER SOURCE TURNS ON, AND SWITCHES TO SATELLITE STATUS SCREEN.
NO
STEP 13
YES
SWITCH TO THE NEXT SCREEN WITH PRESSING NAVI KEY.
MEASURED LATITUDE, LONGITUDE AND TIME ARE TO BE SHOWN.
NO
STEP 14
YES
MAKE THE OUTSIDE POWER SOURCE VOLTAGE +4.7V.
THE MARK IS DISPLAYED.
NO
STEP 15
YES
FUNCTION NORMALLY.
1A Fuse
DC Power Supply

Fig. 42

Connect pin 1 to ⊕ pin 3 to ⊖ . For protection, connect 1A fuse on the side of ⊕ .

STEP 1 : NO POWER

Major Causes:

1) The power source voltage is low.
2) The voltage does not flow from battery pack.
3) The battery terminal between battery pack and unit is defective contact.
4) The harness and connector between Main Board and Operation Board are defective connection.
5) The harness of cable between Main Board and Operation Board is breaking of wire.
6) Soldering of POWER button is failure.
7) Operation Board is failure (Power source section).
8) Adjustment for LCD contrast is defective.

Checks and Repairs:

1)• Measure the voltage between ① pin and ③ pin with the situation that the distance between ② pin and ③ pin of CN101 of battery pack is strain. If the voltage is lower than 4V, battery for Battery Pack might be weak. Install new batteries.

2)• Measure the voltage between ① pin and ③ pin with the situation that the distance between ② pin and ③ pin of CN101 of battery pack is strain. If there is no voltage, fuse F101 on the battery pack board might be burned. Confirm with a tester if there is no electricity flow, then change a fuse.

3)• Confirm if the battery pack case is closed tightly, power source terminal (CN101) is exposed by the normal location.
- Confirm if the waterproof rubber of battery pack and the waterproof rubber around the power source terminal (CN101) of the main unit are installed in a normal position.
- Is there no problem with the solderling to the battery pack and to the board of the power source terminal of the main unit?

4)• Does flexible cable have such problems as disconnection, peeling-off, scar, etc?

5)• Is the cable inserted to each connector (CN101, CN301) on the main board and operation board with the correct direction and locked?
the direction of the cable main board : Electricity flow face of the cable is up.
operation board : Electricity flow face of the cable is down.

6) Is there no problem with the solderling of the power key (SW321) on the operation board?

7) Supply the voltage (between① - ③ pin of CN105, +5), turn on the power source, then confirm the voltage of CN301 on the operation board mentioned below.

pin No. of CN301	Name	Voltage
26, 27	VCC3	about 4 V
28	VBC2	about 5 V
31, 32	VPS	about 5V
33	VEE	-15V ~ -16V

In case the value of each voltage is abnormal, prepare the other normal main board and operation board. Change each board, then find the defective one.
When abnormal voltage is supplied from power source terminal, below mentioned parts could be considered defective.

IC106 (flip flop)
D107 (input protect diode)
Q142 (VPS→ VCC switching transistor)
Q134 (VPS→VCC2 switching Transistor)

8) Installed contrast density might not been seen because of the suddenly change of the circumstances. Try the method mentioned below to recover the density.

press power key
after 3 seconds, press menu key
press right cursor key once
press set key
continue to press right cursor key

STEP 2 : NO BUZZER/NOT TO CHANGE THE SCREEN

Major Causes:

1) The connector between buzzer and Main Board are defective connection.
2) The connector between Main Board and Operation Board are defective connection.
3) The flex between Main board and Operation board is breaking of wire.
4) Operation Board is failure.
5) Main P.C. Board is defective.

Checks and repairs:

1) Check the solderling of CN106, a scar or disconnection of the connection cable.
   Installation could be buzzer off. Cancel it in Menu.
2) Does flexible cable have a disconnection, peeling off, a scar, etc.?
3) Is the cable inserted to each connector (CN101, CN301) on the main board and operation board with the correct direction and locked?
   the direction of the cable main board : Electricity flow face of the cable is up.
   operation board : Electricity flow face of the cable is down.
4) Check the electricity flow mentioned below.
   CN301①, ②, 35, 37 pin
5) Check the signal output mentioned below.
   35 pin of CN301 (IF-DATA)
   37 pin of CN301 (Clock of 16MHz)

STEP 3 : LINE CHIPS ON THE LCD SCREEN/CRACK ON THE LCD PANEL

Major Causes:

1) An excessive temperature stress, an excessive vibration, etc.
2) Defective solderling on the operation board.

Checks and repairs:

1) Change the operation board.
2) Check the defective soldering of IC310~IC315.

STEP 4 : CANNOT ADJUST THE CONTRAST

Major Causes:

1) Defective Main Board (LCD contrast control section)

Checks and repairs:

1) Check the output, when the voltage mentioned below adjust the contrast.
   ⑧ pin of IC113 : about 5 V
   ④ pin of IC113 : about -20V
   ⑤ pin of IC113 :
   Emitter side of Q151(VEE) : -15V~ -16V
   In case no voltage, check the contrast control section according to the circuit diagram.

STEP 5 : REDUCED VOLTAGE DISPLAY APPEARS.

Major Causes:

1) The power source voltage is low. (VPS ≦ 4.7V)

Checks and Repairs:

1) Install new batteries.

STEP 6 : BACK LIGHT DOESN'T TURN ON AND OFF.

Major Causes:

1) Operation board is defective.

Checks and Repairs:

1) Check D306~D317 of LCD's defective soldering and damage .
   Check the back light unit terminal inside the LCD panel is soldered to the operation board.

STEP 7 : RECEIVING WITH SATELLITE IS IMPOSSIBLE.

Major Causes:

1) No satellite/invisible.
2) Defective connection between Antenna and RF Board.
3) Failure of Main Board.
4) Failure of RF Board.

Checks and Repairs:

1) Try measuring again in the location with a good view.
2) Check the connection , disconnection or worning down of the cable connecting CN201 and CN204.
   Check the soldering of CN201 and CN204.
3) Remove the shield case from the main board and check the output voltage of ② pin of IC205 and ② pin of IC206 is about 4V.
   Confirm④ ⑤ ⑥ pins of IC203 and IC204 are supplied the power source.
   Observe the output of ⑥ pin of IC204 with a oscilloscope. If there is not 0-4Vp-p, IC204 has a problem.
4) In case the collector of Q201, Q202, Q203, Q213 is 0V or 4V, Transistor is defective.
5) In case the drain voltage of Q204 is 4V, FET is defective or opening to the source.

STEP 8 : CANNOT CATCH THE SATELLITE/RECEIVING LEVEL IS EXTREMELY LOW.

Major Causes:

1) Correct almanac is not memorized.
2) Shield sheet on the main board is peeling off.
3) Failure of Main Board.

Checks and Repairs:

1) Survey the main unit more than 30 minutes in the place with a good view, then renew the almanac.
2) Check the soldering of the receiving sensitivity inferior prevention shield sheet installed on the operation board.
3) Check the adjustment point of this manual.

Measuring the local signal

Cannot adjust the fied back voltage: PLO section on the main board is defective.
Low lebel of the local signal : Communication section on the main board or buffer amplifier of Q207 is defective.
Confirm the output voltage of ② pin of IC205 and ② pin of IC206 is about 4V.
Confirm④ ⑤ ⑥ pins of IC203 and IC204 are supplied the power source.

STEP 9 : MEASURING PRECISENESS IS BAD/MEASURING TAKES TOO LONG.

Major Causes:

1) New almanac information is not memorized.
2) DOP value is bad.
3) Can not see the satellite in certain direction because of obstacles.
4) Receiving level is extremely low.

Checks and Repairs:

1) Survey the main unit more than 30 minutes in the place with a good view, then renew the almanac.
2) Survey the main unit more than 30 minutes in the place with a good view, then catch the satellite of low looking up angle.
3) Receiving should be in the location with a good view.
4) Refer to STEP 8.

STEP 10 : CANNOT INSERT THE CARD/CANNOT READ THE CARD.

Major Causes:

1) Is the card inserted with the correct direction?
2) Is the card inserted to the end?
3) Isn't the card defective?
4) Main board is defective.

Checks and Repairs:

1) Insert the card straight with making the connector side front.
2) Check if the insert guide of card side is defective.
3) Prepare a new card, then check if the card can be read.
4) Check the defective solderling or breakage of the card connector (CN109) on the main board.
5) With the card inserted, check if 43 pin of IC108 and 103 pin are GND.

STEP 11 : THE MAP IS NOT DISPLAYED.

Major Causes:

1) The map card data is defective.

Checks and Repairs:

1) Prepare a new card, then check if the card can be read.

STEP 12 : POWER SOURCE DOESN'T TURN OFF.

Major Causes:

1) The power key is being pressed.
2) Main board is defective.

Checks and Repairs:

1) Press the power key. When power off count down begins, leave the finger.
2) Check if the low signal comes to 128 pin of IC108 when the power key is pressed.
   Check if the low signal comes to 12 pin of IC106 from 125 pin of IC108 after power off count down.

STEP 13 : POWER SOURCE DOESN'T TURN ON.

Major Causes:

1) The connection to the power source terminal is incorrect.

Checks and Repairs:

1) Supply the power source correctly.

STEP 14 : CANNOT STORE DATA.

Major Causes:

1) The voltage of lithium battery for back up becomes low.
2) The cable connecting lithium battery and main board is disconnected.
3) Connector is disconnected.
4) Main board is defective.
5) Operation board is defective.

Checks and Repairs:

1) Remove the back cabinet of main unit, then measure the lithium battery's voltage between the terminals on the main board. Replace it when the voltage is lower than 2.0V.
2) Check the voltage between ④ - ① pins of CN106 connecting to main board.
3) Check the cable connection to CN106 connecting to Main board.
4) Check ⑧ pin of IC104 and ⑧ pin of IC105 on Main board are supplied the voltage of lithium battery.
5) Check 28 pin of IC304~ IC307 and 18pin of IC309 on the operation board are supplied the lithium battery's voltage.

STEP 15 : CANNOT BE DISPLAYED REDUCING VOLTAGE INDICATION MARK.

Major Causes:

1) Main board is defective.

Checks and Repairs:

1) Confirm if ③ pin of IC112 on main board becomes HIGH, when external power source voltage is +4.3.

CABINET AND ELECTRICAL PARTS LOCATION (KX-G5700X)

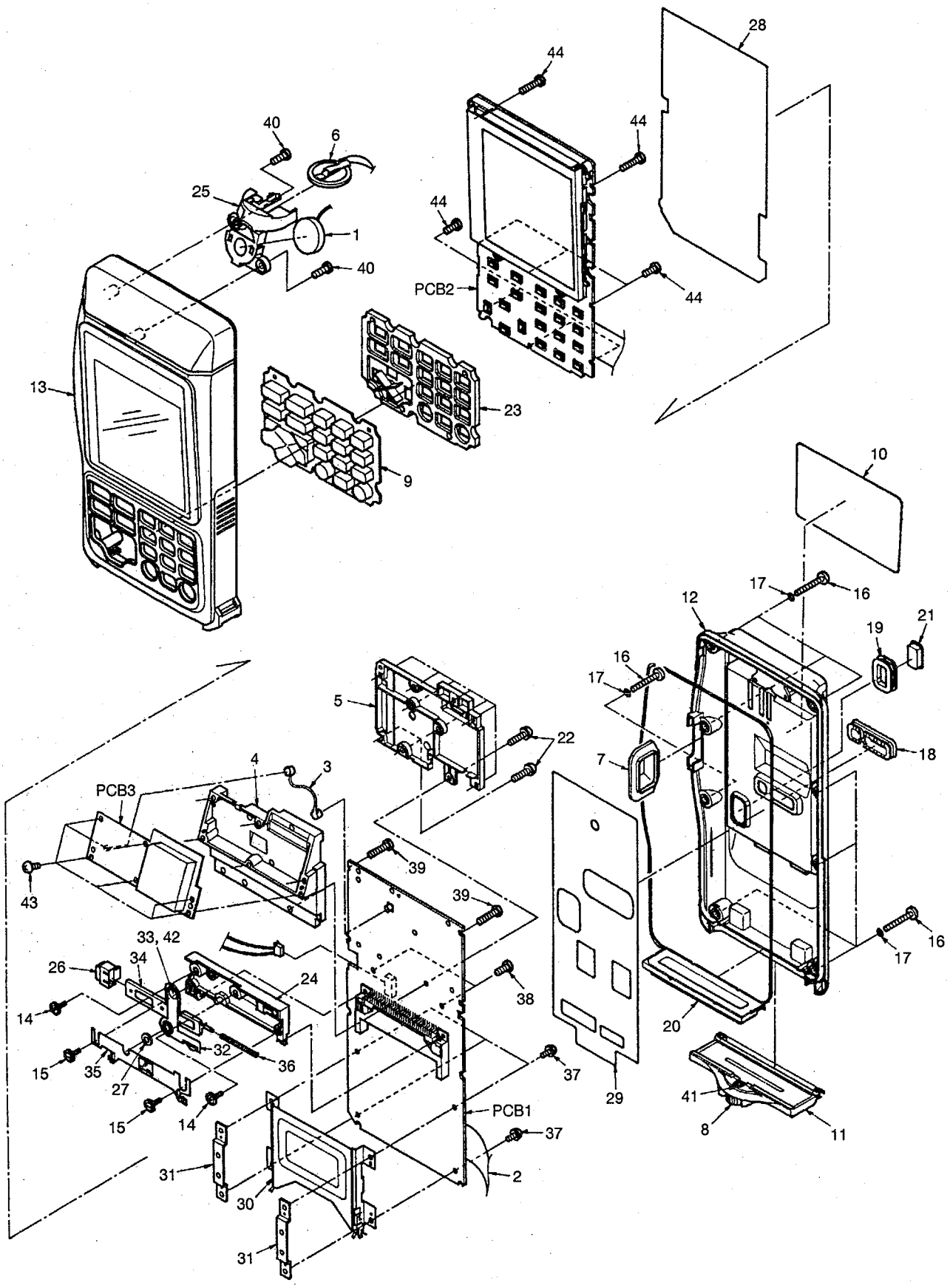


Fig. 43

CABINET AND ELECTRICAL PARTS LOCATION (KX-G45X)

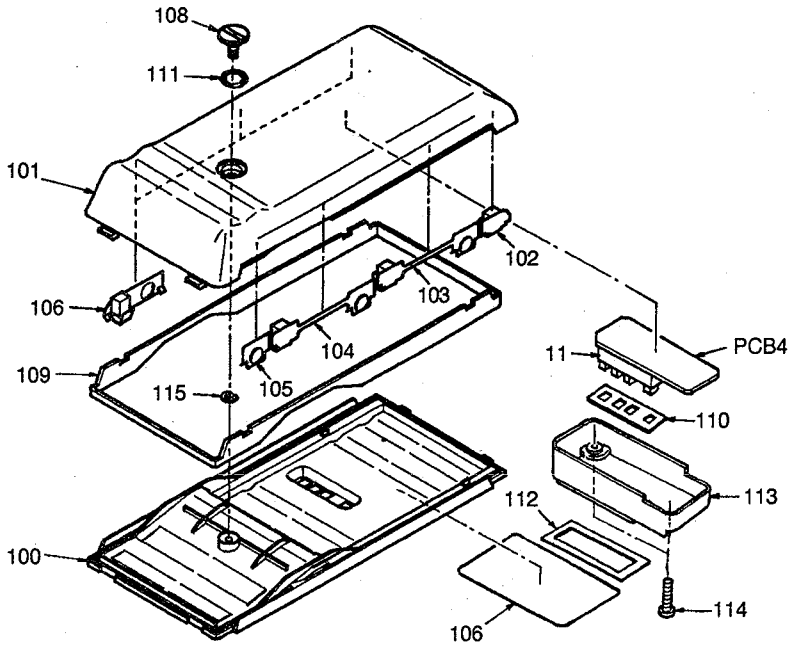


Fig. 44

ACCESSORIES AND PACKING MATERIALS

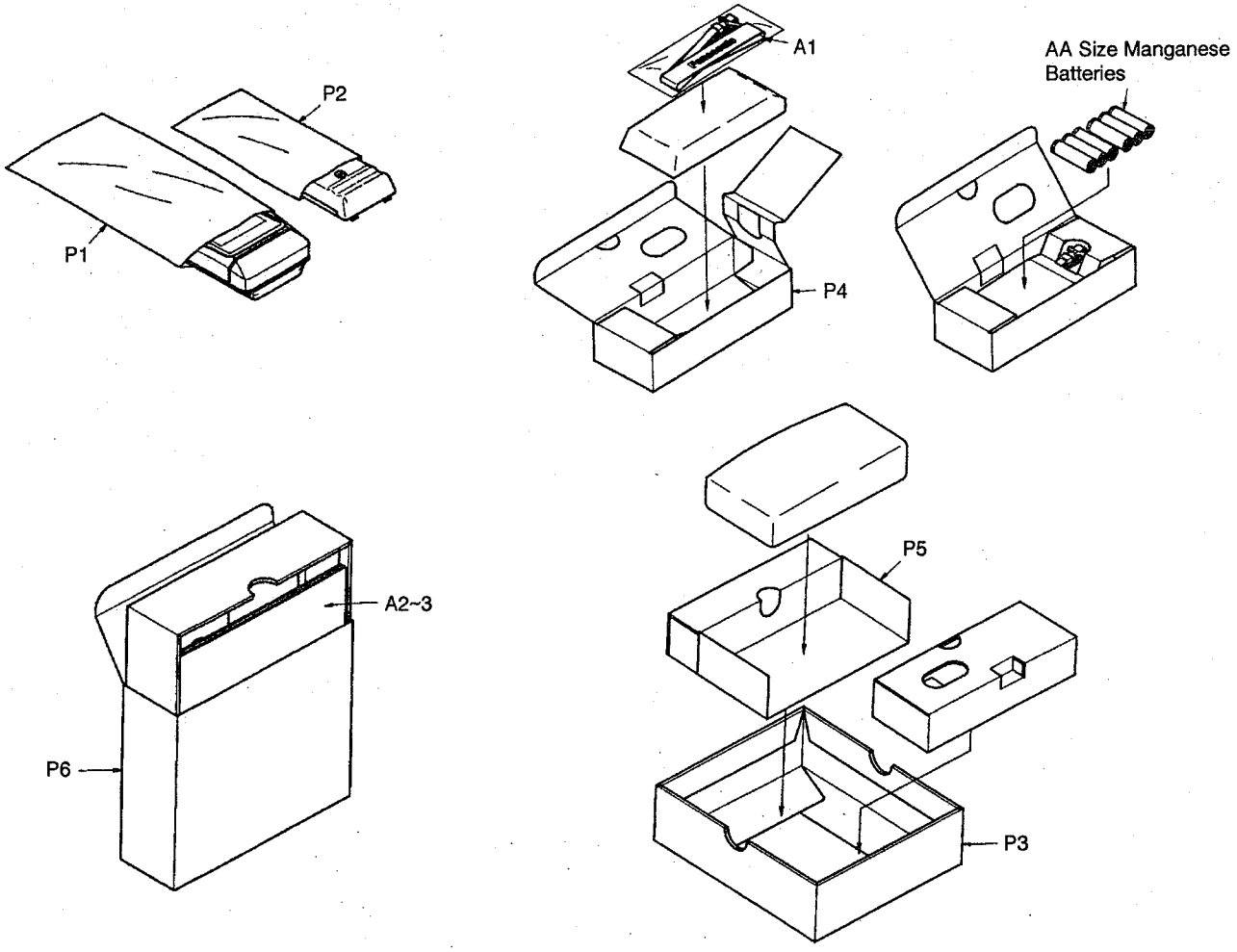


Fig. 45

REPLACEMENT PARTS LIST

KX-G5700X

1. RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

2. Important safety notice
   Components identified by the ⚠ mark special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The S mark indicates service standard parts and may differ from production parts.
4. RESISTORS & CAPACITORS
   Unless otherwise specified.
   All resistors are in ohms (Ω) K=1000Ω, M=1000KΩ
   All capacitors are in MICRO FARADS (μF) P=μμF
   *Type &Wattage of Resistor
   Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor
Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyester
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs/ Set
		MAIN BOARD PARTS	
PCB1	PQWP1G5700X	MAIN BOARD ASS'Y(RTL)	1
		(ICs)	
IC101	PQVI37732S4H	IC	1
IC102	PQVISL90SF2L	IC	1
IC103	PQVI55BX172A	IC	1
IC104	PQVICX5811TD	IC	1
IC105	PQVICX5811YD	IC	1
IC106	PQVISN7H00D	IC	1
IC107	PQVIRS55045A	IC	1
IC108	PQVISL90PF1Y	IC	1
IC110	PQVINJM2360M	IC	1
IC112	PQVINJ2103M	IC	1
IC113	PQVINJM4560M	IC	1
IC116	PQVILA5004ME	IC	1
IC201	PQVISN7H04D	IC	1
IC202	AN8547S	IC	1
IC203	PQVICXA1293M	IC	1
IC204	PQVITC7S04FR	IC	1
IC205	PQVILA5004ME	IC	1
IC206	PQVILA5004ME	IC	1
		(TRANSISTORS)	
Q105	PQVTDTC144TU	TRANSISTOR(SI)	1
Q115	PQVTFMG2T148	TRANSISTOR(SI)	1
Q116	PQVTFMG2T148	TRANSISTOR(SI)	1
Q117	PQVTFMG2T148	TRANSISTOR(SI)	1
Q118	PQVTDTA114YU	TRANSISTOR(SI)	1
Q127	2SB1073R	TRANSISTOR(SI)	1
Q128	2SD1280	TRANSISTOR(SI)	1
Q129	2SB956R	TRANSISTOR(SI)	1
Q130	2SB956R	TRANSISTOR(SI)	1
Q131	2SB970A	TRANSISTOR(SI)	1
Q132	UN5213	TRANSISTOR(SI) S	1
Q133	2SB970A	TRANSISTOR(SI) S	1
Q134	2SB956R	TRANSISTOR(SI)	1
Q137	2SB1073R	TRANSISTOR(SI)	1
Q138	UN5213	TRANSISTOR(SI) S	1
Q139	UN5113	TRANSISTOR(SI) S	1
Q140	UN5213	TRANSISTOR(SI) S	1
Q141	UN5213	TRANSISTOR(SI) S	1
Q142	2SB1073R	TRANSISTOR(SI)	1
Q143	UN5213	TRANSISTOR(SI) S	1
Q145	PQVTDTC144TU	TRANSISTOR(SI)	1
Q148	UN5213	TRANSISTOR(SI) S	1
Q149	PQVTFMG2T148	TRANSISTOR(SI)	1
Q150	PQVTFMG2T148	TRANSISTOR(SI)	1
Q151	2SB1073R	TRANSISTOR(SI)	1
Q160	2SB970A	TRANSISTOR(SI) S	1
Q204	3SK228	TRANSISTOR(SI)	1
Q205	2SC2619C	TRANSISTOR(SI)	1
Q206	2SD2216R	TRANSISTOR(SI)	1
Q207	2SC4228R	TRANSISTOR(SI)	1
Q208	2SC4515	TRANSISTOR(SI)	1
Q209	2SC4808	TRANSISTOR(SI)	1
Q210	2SC4247TE85L	TRANSISTOR(SI)	1
Q211	2SC4247TE85L	TRANSISTOR(SI)	1
Q212	2SC4247TE85L	TRANSISTOR(SI)	1
		(DDIODES)	
D103	MA110	DIODE(SI)	1
D107	MA110	DIODE(SI)	1
D108	PQVDRB110C	DIODE(SI)	1
D109	MA110	DIODE(SI)	1
D111	PQVDRB400D	DIODE(SI)	1
D112	MA110	DIODE(SI)	1
D113	MA110	DIODE(SI)	1
D115	MA110	DIODE(SI)	1
D116	MA110	DIODE(SI)	1
D118	MA110	DIODE(SI)	1
D119	MA110	DIODE(SI)	1
D120	MA8030M	DIODE(SI)	1
D122	MA110	DIODE(SI)	1
D123	MA110	DIODE(SI)	1
D201	MA321	DIODE(SI)	1
D202	MA110	DIODE(SI)	1
		(COILS)	
L101	PQLQR10180K	COIL	1
L102	PQLQR10181K	COIL	1
L201	PQLQR1F14.75	COIL	1
L202	PQLQR1S039JT	COIL	1
L203	PQLQR1I68NG	COIL	1
L204	PQLQR1S033JT	COIL	1
L205	PQLQR1C033JT	COIL	1
L206	PQLQR1C033JT	COIL	1
L207	PQLQR1C056JT	COIL	1
L208	PQLQR1I15NG	COIL	1
L209	PQLQR1S101JT	COIL	1
L210	PQLQR1S101JT	COIL	1
L211	PQLQR1C101KT	COIL	1
L212	PQLQR1S470JT	COIL	1
L213	PQLQR1S470JT	COIL	1
L214	PQLQR1S101JT	COIL	1
L215	PQLQR1I22NG	COIL	1
L216	PQLQR1S101JT	COIL	1

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		(CERAMIC FILTERS)	
FL202	PQVFKDF1557A	CERAMIC FILTER	1
FL203	PQLRE004L	CERAMIC FILTER	1
		(CRYSTAL OSCILLATORS)	
X102	PQVBPBRC16.0	CRYSTAL OSCILLATOR	1
X201	PQVCA303B163	CRYSTAL OSCILLATOR S	1
X202	EF0H388MVP1	CERAMIC FILTER	1
		(RESISTORS)	
R101	ERJ3GEYJ472	4.7K	1
R102	ERJ3GEYJ102	1K	1
R103	ERJ3GEYJ472	4.7K	1
R104	ERJ3GEYJ472	4.7K	1
R105	ERJ3GEYJ104	100K	1
R106	ERJ3GEYJ272	2.7K	1
R107	ERJ3GEYJ821	820	1
R108	ERJ3GEYJ472	4.7K	1
R109	ERJ3GEYJ102	1K	1
R110	ERJ3GEYJ473	47K	1
R111	ERJ3GEYJ181	180	1
R112	ERJ3GEYJ120	12	1
R113	ERJ3GEYJ473	47K	1
R114	ERJ3GEYJ682	6.8K	1
R115	ERJ3GEYJ272	2.7K	1
R116	ERJ3GEYJ272	2.7K	1
R117	ERJ3GEYJ272	2.7K	1
R118	ERJ3GEYJ473	47K	1
R119	ERJ3GEYJ682	6.8K	1
R120	ERJ3GEYJ473	47K	1
R121	ERJ3GEYJ102	1K	1
R122	ERJ3GEYJ272	2.7K	1
R123	ERJ3GEYJ272	2.7K	1
R124	ERJ3GEYF682	6.8K	1
R126	ERJ3GEYJ473	47K	1
R127	ERJ3GEYJ472	4.7K	1
R128	ERJ3GEYF103	10K	1
R129	ERJ3GEYJ183	18K	1
R130	ERJ3GEYJ333	33K	1
R131	ERJ3GEYJ103	10K	1
R132	ERJ3GEYJ272	2.7K	1
R133	ERJ6GEYJ1R0	1	1
R134	ERJ3GEYF102	1K	1
R135	ERJ3GEYF153	15K	1
R136	ERJ3GEYF333	33K	1
R137	ERJ3GEYF153	15K	1
R138	ERJ3GEYJ103	10K	1
R139	ERJ3GEYJ472	4.7K	1
R140	ERJ3GEYF123	12K	1
R141	ERJ3GEYF682	6.8K	1
R142	ERJ3GEYJ103	10K	1
R143	ERJ3GEYJ272	2.7K	1
R144	ERJ3GEYJ272	2.7K	1
R145	ERJ3GEYJ000	0	1
R146	ERJ3GEYF222	2.2K	1
R147	ERJ3GEYJ103	10K	1
R148	ERJ3GEYJ105	1M	1
R150	ERJ3GEYJ104	100K	1
R151	ERJ3GEYJ331	330	1
R152	ERJ3GEYJ103	10K	1
R153	ERJ3GEYJ103	10K	1
R154	ERJ3GEYJ103	10K	1
R159	ERJ3GEYJ103	10K	1
R161	ERJ3GEYF182	1.8K	1
R162	ERJ3GEYF103	10K	1
R163	ERJ3GEYJ223	22K	1
R164	ERJ3GEYF103	10K	1
R165	ERJ3GEYF473	47K	1
R166	ERJ3GEYF563	56K	1
R167	ERJ3GEYF223	22K	1

Ref. No.	Part No.	Part Name & Description	Pcs/Set
R168	ERJ3GEYF103	10K	1
R169	ERJ3GEYF474	470K	1
R170	ERJ3GEYF331	330	1
R171	ERJ3GEYJ103	10K	1
R172	ERJ3GEYJ103	10K	1
R173	ERJ3GEYJ103	10K	1
R174	ERJ3GEYJ223	22K	1
R175	ERJ3GEYJ223	22K	1
R176	ERJ3GEYJ222	2.2K	1
R178	ERJ3GEYF103	10K	1
R179	ERJ3GEYJ103	10K	1
R180	ERJ3GEYJ101	100	1
R181	ERJ3GEYJ473	47K	1
R182	ERJ3GEYJ473	47K	1
R183	ERJ3GEYJ473	47K	1
R185	ERJ3GEYJ103	10K	1
R186	ERJ3GEYF562	5.6K	1
R187	ERJ3GEYJ1R0	1	1
R189	ERJ3GEYF562	5.6K	1
R191	ERJ3GEYJ103	10K	1
R192	ERJ3GEYJ472	4.7K	1
R194	ERJ3GEYJ154	150K	1
R195	ERJ3GEYJ473	47K	1
R196	ERJ3GEYF113	11K	1
R197	ERJ3GEYJ105	1M	1
R198	ERJ3GEYJ184	180K	1
R199	ERJ3GEYJ754	750K	1
R207	ERJ3GEYJ472	4.7K	1
R209	ERJ3GEYJ562	5.6K	1
R210	ERJ3GEYJ471	470	1
R211	ERJ3GEYJ101	100	1
R212	ERJ3GEYJ223	22K	1
R213	ERJ3GEYJ393	39K	1
R214	ERJ3GEYJ101	100	1
R215	ERJ3GEYJ221	220	1
R216	ERJ3GEYJ221	220	1
R217	ERJ3GEYJ102	1K	1
R218	ERJ3GEYJ225	2.2M	1
R219	ERJ3GEYJ562	5.6K	1
R220	ERJ3GEYJ101	100	1
R221	ERJ3GEYJ682	6.8K	1
R222	ERJ3GEYJ102	1K	1
R224	ERJ3GEYJ683	68K	1
R225	ERJ3GEYJ101	100	1
R226	ERJ3GEYJ473	47K	1
R227	ERJ3GEYJ101	100	1
R228	ERJ3GEYJ823	82K	1
R229	ERJ3GEYJ101	100	1
R230	ERJ3GEYJ101	100	1
R231	ERJ3GEYJ103	10K	1
R232	ERJ3GEYJ392	3.9K	1
R233	ERJ3GEYJ102	1K	1
R234	ERJ3GEYJ220	22	1
R235	ERJ3GEYJ105	1M	1
R236	ERJ3GEYJ101	100	1
R237	ERJ3GEYJ101	100	1
R238	ERJ3GEYJ105	1M	1
R239	ERJ3GEYJ822	8.2K	1
R240	ERJ3GEYJ562	5.6K	1
R241	ERJ3GEYJ101	100	1
R242	ERJ3GEYJ221	220	1
R243	ERJ3GEYJ820	82	1
R244	ERJ3GEYJ472	4.7K	1
R245	ERJ3GEYJ122	1.2K	1
R246	ERJ3GEYJ151	150	1
R247	ERJ3GEYJ101	100	1
R248	ERJ3GEYJ220	22	1
R249	ERJ3GEYJ822	8.2K	1
R250	ERJ3GEYJ562	5.6K	1
R251	ERJ3GEYJ221	220	1
R252	ERJ3GEYJ180	18	1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
R253	ERJ3GEYJ180	18		1
R254	ERJ3GEYJ180	18		1
R255	ERJ3GEYJ101	100		1
R299	ERJ3GEYJ101	100		1
		(CAPACITOR)		
C125	ECUV1H102KBV	0.001	S	1
C126	ECUV1H104ZFV	0.1	S	1
C127	ECUV1H101JCV	100P		1
C129	ECSTAJ1CD336	33		1
C130	ECST1AX156	15		1
C131	ECST1AX156	15		1
C132	ECST1AX156	15		1
C133	ECUV1H104ZFV	0.1	S	1
C134	ECST1CX106	10		1
C135	ECUV1H561JCV	560P		1
C136	ECST1VD685	6.8		1
C137	ECUV1H104ZFV	0.1	S	1
C138	ECSTAJ1AA475	4.7		1
C139	ECUV1H104ZFV	0.1	S	1
C141	ECUV1H104ZFV	0.1	S	1
C144	ECUV1H104ZFV	0.1	S	1
C145	ECUV1H104ZFV	0.1	S	1
C146	ECSTAJ1AA475	4.7		1
C148	ECSTAJ1AD686	68		1
C149	ECUV1H104ZFV	0.1	S	1
C150	ECST1CX106	10		1
C151	ECUV1H104ZFV	0.1	S	1
C156	ECSTAJ1AB106	10		1
C160	ECUV1H104ZFV	0.1	S	1
C161	ECUV1H104ZFV	0.1	S	1
C162	ECUV1H104ZFV	0.1	S	1
C164	ECUV1H104ZFV	0.1	S	1
C165	ECUV1H101JCV	100P		1
C166	ECUV1H101JCV	100P		1
C168	ECSTAJ1AD686	68		1
C169	ECUV1H100DCV	10P		1
C170	ECUV1H104ZFV	0.1	S	1
C171	ECUV1H104ZFV	0.1	S	1
C172	ECUV1H104ZFV	0.1	S	1
C173	ECUV1H104ZFV	0.1	S	1
C174	ECSTAJ1CD336	33		1
C178	ECSTAJ1AD686	68		1
C179	ECUV1H104ZFV	0.1	S	1
C180	ECUV1H104ZFV	0.1	S	1
C181	ECUV1H104ZFV	0.1	S	1
C182	ECUV1H100DCV	10P		1
C183	ECUV1H100DCV	10P		1
C184	ECUV1H100DCV	10P		1
C185	ECST1AX156	15		1
C190	ECST1AX156	15		1
C192	ECUV1H101JCV	100P		1
C193	ECUV1H101JCV	100P		1
C194	ECUV1H100DCV	10P		1
C195	ECUV1H100DCV	10P		1
C196	ECUV1H104ZFV	0.1	S	1
C197	ECUV1H104ZFV	0.1	S	1
C198	ECUV1H104ZFV	0.1	S	1
C199	ECUV1H101JCV	100P		1
C216	ECUV1H270JCV	27P		1
C217	ECUV1H270JCV	27P		1
C218	ECUV1H104ZFV	0.1	S	1
C219	ECUV1H104ZFV	0.1	S	1
C222	ECUV1H104ZFV	0.1	S	1
C223	ECUV1H103KBV	0.01		1
C224	ECUV1H104ZFV	0.1	S	1
C225	ECUV1H104ZFV	0.1	S	1
C226	ECUV1H104ZFV	0.1	S	1
C227	ECSTAJ1AB106	10		1
C228	ECUV1H104ZFV	0.1	S	1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
C229	ECUV1H104ZFV	0.1	S	1
C230	ECSTAJ1AB106	10		1
C231	ECST1CY105	1	S	1
C232	ECST1CY225	2.2	S	1
C233	ECUV1H332KBV	0.0033		1
C234	ECUV1H020CCV	2P		1
C235	ECUV1H101JCV	100P		1
C236	ECUV1H010CCV	1P		1
C237	ECUV1H150JCV	15P		1
C238	ECUV1H020CCV	2P		1
C239	ECUV1H050CCV	5P	S	1
C240	ECUV1H101JCV	100P		1
C241	ECUV1H010CCV	1P		1
C242	ECUV1H070DCV	7P		1
C243	ECUV1H020CCV	2P		1
C244	ECUV1H030CCV	3P	S	1
C245	ECUV1H101JCV	100P		1
C248	ECUV1H120JCV	12P		1
C249	ECUV1H104ZFV	0.1	S	1
C250	ECUV1H101JCV	100P		1
C251	ECSTAJ1AB106	10		1
C252	ECUV1H102KBV	0.001	S	1
C253	ECUV1H104ZFV	0.1	S	1
C254	ECUV1H102KBV	0.001	S	1
C256	ECUV1H103KBV	0.01		1
C257	ECUV1H103KBV	0.01		1
C258	ECUV1H103KBV	0.01		1
C259	ECUV1H103KBV	0.01		1
C260	ECUV1H103KBV	0.01		1
C261	ECUV1H104ZFV	0.1	S	1
C262	ECUV1H104ZFV	0.1	S	1
C263	ECUV1H104ZFV	0.1	S	1
C264	ECUV1H104ZFV	0.1	S	1
C265	ECUV1H180JCV	18P		1
C266	ECUV1H180JCV	18P		1
C267	ECUV1H104ZFV	0.1	S	1
C268	ECUV1H180JCV	18P		1
C269	ECUV1H180JCV	18P		1
C270	ECUV1H104ZFV	0.1	S	1
C271	ECSTAJ1AB106	10		1
C272	ECUV1H270JCV	27P		1
C273	ECUV1H102KBV	0.001	S	1
C274	ECUV1H180JCV	18P		1
C275	ECST1CY225	2.2	S	1
C276	ECUV1H102KBV	0.001	S	1
C277	PQCVTZC100	10P		1
C278	ECUV1H100DCV	10P		1
C279	ECUV1H040CCV	4P		1
C280	ECUV1H020CCV	2P		1
C281	ECUV1H102KBV	0.001	S	1
C282	ECUV1H100DCV	10P		1
C283	ECUV1H100DCV	10P		1
C284	ECSTAJ1AB106	10		1
C285	ECSTAJ1AB106	10		1
C286	ECSTAJ1AB106	10		1
C287	ECUV1H050CCV	5P	S	1
C289	ECUV1H104ZFV	0.1	S	1
C290	ECSTAJ1AB106	10		1
C291	ECUV1H104ZFV	0.1	S	1
		(CONNECTORS)		
CN101	PQJP40A63Z	CONNECTOR		1
CN103	PQJT10060Z	BATTERY TERMINAL		1
CN105	PQJT10059Z	BATTERY TERMINAL		1
CN106	PQJS04A11Z	CONNECTOR		1
CN109	PQJP68A65Z	CONNECTOR		1
CN204	PQJS02A23Z	CONNECTOR		1
		(THERMISTOR)		
TH101	PQRT5G36B103	THERMISTOR		1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
		LCD BOARD PARTS		
PCB2	PQWP2G5700X	LCD BOARD ASS'Y(RTL)		1
		(ICs)		
IC301	PQVI400BFKX	IC		1
IC302	PQVI1039F0F	IC		1
IC303	PQVI52D171A	IC		1
IC304	PQVICX5825TF	IC		1
IC305	PQVICX5825TF	IC		1
IC306	PQVICX5825TF	IC		1
IC307	PQVICX5825TF	IC		1
IC308	PQVITC7S04FR	IC		1
IC309	PQVIRIF5C62	IC		1
IC310	PQVIHD66204L	IC		1
IC311	PQVIHD66204L	IC		1
IC312	PQVIHD66204L	IC		1
IC313	PQVIHD66205L	IC		1
IC314	PQVIHD66205L	IC		1
IC315	PQVIHD66205L	IC		1
IC316	PQVINJM2058V	IC		1
IC317	PQVITC7S08FR	IC		1
		(TRANSISTORS)		
Q310	PQVTDTC114Y	TRANSISTOR(SI)		1
Q311	PQVTDTC114Y	TRANSISTOR(SI)		1
Q320	UN5113	TRANSISTOR(SI)	S	1
Q323	PQVTFMG2T148	TRANSISTOR(SI)		1
		(DIODES)		
D301	MA110	DIODE(SI)		1
D302	MA110	DIODE(SI)		1
D303	MA110	DIODE(SI)		1
D304	MA110	DIODE(SI)		1
D306	PQVDCL170YGC	DIODE(SI)		1
D307	PQVDCL170YGC	DIODE(SI)		1
D308	PQVDCL170YGC	DIODE(SI)		1
D309	PQVDCL170YGC	DIODE(SI)		1
D310	PQVDCL170YGC	DIODE(SI)		1
D311	PQVDCL170YGC	DIODE(SI)		1
D312	PQVDCL170YGC	DIODE(SI)		1
D313	PQVDCL170YGC	DIODE(SI)		1
D314	PQVDCL170YGC	DIODE(SI)		1
D315	PQVDCL170YGC	DIODE(SI)		1
D316	PQVDCL170YGC	DIODE(SI)		1
D317	PQVDCL170YGC	DIODE(SI)		1
		(SWITCHS)		
S301	PQSH1A102Z	SWITCH		1
S302	PQSH1A102Z	SWITCH		1
S303	PQSH1A102Z	SWITCH		1
S304	PQSH1A102Z	SWITCH		1
S305	PQSH1A102Z	SWITCH		1
S306	PQSH1A102Z	SWITCH		1
S307	PQSH1A102Z	SWITCH		1
S308	PQSH1A102Z	SWITCH		1
S309	PQSH1A102Z	SWITCH		1
S310	PQSH1A102Z	SWITCH		1
S311	PQSH1A102Z	SWITCH		1
S312	PQSH1A102Z	SWITCH		1
S313	PQSH1A102Z	SWITCH		1
S314	PQSH1A102Z	SWITCH		1
S315	PQSH1A102Z	SWITCH		1
S316	PQSH1A102Z	SWITCH		1
S317	PQSH1A102Z	SWITCH		1
S318	PQSH1A102Z	SWITCH		1
S319	PQSH1A102Z	SWITCH		1
S320	PQSH1A102Z	SWITCH		1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
		(RESISTORS)		
R301	ERJ3GEYF103	10K		1
R302	ERJ3GEYF103	10K		1
R303	ERJ3GEYF683	68K		1
R304	ERJ3GEYF103	10K		1
R305	ERJ3GEYF103	10K		1
R306	PQ4R10XJ151	150	S	1
R307	PQ4R10XJ151	150	S	1
R308	PQ4R10XJ680	68	S	1
R309	PQ4R10XJ680	68	S	1
R310	ERJ3GEYJ103	10K		1
R311	ERJ3GEYJ103	10K		1
R312	ERJ3GEYJ103	10K		1
R313	ERJ3GEYJ103	10K		1
R314	ERJ3GEYJ103	10K		1
R315	ERJ3GEYJ103	10K		1
R316	ERJ3GEYJ103	10K		1
R317	ERJ3GEYJ103	10K		1
R320	ERJ3GEYJ101	100		1
R321	ERJ3GEYJ101	100		1
R322	ERJ3GEYJ101	100		1
R323	ERJ3GEYJ101	100		1
R324	ERJ3GEYJ103	10K		1
R325	ERJ3GEYJ103	10K		1
R326	ERJ3GEYJ103	10K		1
R327	ERJ3GEYJ103	10K		1
R328	ERJ3GEYJ103	10K		1
R329	ERJ3GEYJ103	10K		1
R330	ERJ3GEYJ103	10K		1
R331	ERJ3GEYJ103	10K		1
R332	ERJ3GEYJ103	10K		1
		(CAPACITORS)		
C301	ECST1CY105	1	S	1
C302	ECUV1H104ZFV	0.1	S	1
C303	ECUV1H104ZFV	0.1	S	1
C304	ECUV1H104ZFV	0.1	S	1
C305	ECUV1H104ZFV	0.1	S	1
C306	ECUV1H104ZFV	0.1	S	1
C307	ECUV1H104ZFV	0.1	S	1
C308	ECUV1H104ZFV	0.1	S	1
C309	ECUV1H104ZFV	0.1	S	1
C310	ECUV1H150JCV	15P		1
C311	ECUV1H150JCV	15P		1
C312	ECUV1H104ZFV	0.1	S	1
C313	ECUV1H104ZFV	0.1	S	1
C314	ECUV1H104ZFV	0.1	S	1
C315	ECUV1H104ZFV	0.1	S	1
C316	ECUV1H104ZFV	0.1	S	1
C317	ECUV1H104ZFV	0.1	S	1
C318	ECUV1H104ZFV	0.1	S	1
C319	ECUV1H104ZFV	0.1	S	1
C320	ECUV1H104ZFV	0.1	S	1
C321	ECUV1H104ZFV	0.1	S	1
C322	ECUV1H104ZFV	0.1	S	1
C323	ECUV1H104ZFV	0.1	S	1
C324	ECUV1H104ZFV	0.1	S	1
C325	ECUV1H680JCV	68P		1
C330	ECST1VD685	6.8		1
C331	ECUV1H473MDV	0.047	S	1
C332	ECUV1H473MDV	0.047	S	1
C333	ECUV1H180JCV	18P		1
C334	ECUV1H180JCV	18P		1
C337	ECUV1H180JCV	18P		1
		(CONNECTOR)		
CN301	PQJP40A64Z	CONNECTOR		1

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		ANTENNA BOARD PARTS	
PCB3	PQWP3G5700X	ANTENNA BOARD ASS'Y(RTL)	1
		(TRANSISTORS)	
Q201	2SC4784	TRANSISTOR(SI)	1
Q202	2SC4228R	TRANSISTOR(SI)	1
Q203	2SC4228R	TRANSISTOR(SI)	1
Q213	2SC4228R	TRANSISTOR(SI)	1
		(RESISTORS)	
R201	ERJ3GEYJ823	82K	1
R202	ERJ3GEYJ101	100	1
R203	ERJ3GEYJ104	100K	1
R204	ERJ3GEYJ101	100	1
R205	ERJ3GEYJ104	100K	1
R206	ERJ3GEYJ101	100	1
R209	ERJ3GEYJ101	100	1
R256	ERJ3GEYJ104	100K	1
R257	ERJ3GEYJ101	100	1
		(CAPACITORS)	
C201	ECUV1H270JCV	27P	1
C202	ECUV1H010CCV	1P	1
C203	ECUV1H103KBV	0.01	1
C204	ECUV1H102KBV	0.001	1
C205	ECUV1H1R5CCV	1.5P	1
C206	ECUV1H101JCV	100P	1
C207	ECUV1H121JCV	120P	1
C208	ECUV1H1R5CCV	1.5P	1
C209	ECUV1H010CCV	1P	1
C210	ECUV1H102KBV	0.001	1
C211	ECUV1H181JCV	180P	1
C212	ECUV1H2R5CCV	2.5P	1
C214	ECUV1H100DCV	10P	1
C215	ECUV1H103KBV	0.01	1
C293	ECUV1H010CCV	1P	1
C296	ECUV1H101JCV	100P	1
C297	ECUV1H470JCV	47P	1
		(CONNECTOR)	
CN201	PQJS02A23Z	CONNECTOR	1
		(CERAMIC FILTER)	
FL201	PQVFDFB1575E	CERAMIC FILTER	1
		(CRYSTAL)	
X301	PQVCE3276N9Z	CRYSTAL OSCILLTAR	1
		CABINET AND ELECTRICAL PARTS	
1	EFBS35-4A25	BUZZER	1
2	PQJE10037Z	LEAD WIRE	1
3	PQJP02R08Z	CONNECTOR	1
4	PQMC10067Z	INSULATOR	1
5	PQMC10068Z	INSULATOR	1
6	PQPCR2032	PRIMARY BATTERY	1
7	PQBC10126Z1	BUTTON	1
8	PQBC10164Z2	BUTTON	1
9	PQBX10158Z1	BUTTON	1
10	PQGT11540Z	NAME PLATE	1
11	PQKK10030Z1	LID	1
12	PQYFG5700M	CABINET PLATE	1
13	PQYMG5700M	CABINET BODY	1
14	PQHD10018Z	SCREW	2

Ref. No.	Part No.	Part Name & Description	Pcs/Set
15	PQHD10022Z	SCREW	2
16	PQHE10028Z	SCREW	8
17	PQHG10032Z	PLASTIC PARTS	8
18	PQHG10161Z	PACKING	1
19	PQHG10162Z	PACKING	1
20	PQHG10163Z	PACKING	1
21	PQHG10178Z	PACKING	1
22	XYN2+C8	SCREW	9
23	PQHR10196Z	SPACER	1
24	PQHR10199Z	CHASSIS	1
25	PQHR10200Z	SPACER	1
26	PQHR10296Z	KNOB	1
27	PQHR10313Z	SPACER	1
28	PQMC10142Y	INSULATDR	1
29	PQMC10143Z	INSULATDR	1
30	PQME10011Z	ANGLE	1
31	PQME10012Z	ANGLE	2
32	PQME10013Z	LEVER	1
33	PQMH10123Z	SPACER	1
34	PQMH10126Z	ARM	1
35	PQMH10165Z	ARM	1
36	PQUS10006Z	SPRING	1
37	XSB2+5	SCREW	6
38	XSN2+6	SCREW	2
39	XTB23+8J	SCREW	4
40	XTB26+6G	SCREW	2
41	XUC2FY	RETAINING RING	1
42	XUC25FY	RETAINING RING	1
43	XYN2+C4	SCREW	10
44	XYN2+C6	SCREW	6
		ACCESSSORIES AND PACKING MATERIALS	
A1	PQQC10001Z	HAND STRAP	1
A2	PQQW10597Z	QUICK REFERENCE CARD	1
A3	PQQW10989Z	PRECAUTION LEAFLET	1
A4	PQQX10669Z	INSTRUCTION BOOK	1
P1	PQPH10022Y	PROTECTION COVER	1
P2	XZB10X20A04	PROTECTION COVER	1
P3	PQPN10239Z	CUSHION	1
P4	PQPN10240Z	CUSHION	1
P5	PQPN10410Z	CUSHION	1
P6	PQPK11308Z	GIFT BOX	1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
		KX-G45X		
		BATTERY BOARD PARTS		
PCB4	PQWPG45X	BATTERY BOARD ASS'Y (RTL)		1
		(IC)		
IC501	PQVINJU7102M	IC		1
		(TRANSISTOR)		
Q502	2SB1073R	TRANSISTOR(SI)		1
		(DIODES)		
D501	MA737	DIODE(SI)		1
D502	MA8030	DIODE(SI)		1
		(COIL)		
L501	PQLQR1P680K	COIL		1
		(FUSE)		
F501	PQBAGD06NMAK	FUSE		1
		(RESISTORS)		
R503	ERJ3GEYJ561	560		1
R504	ERJ3GEYJ331	330		1
R507	ERJ3GEYJ103	10K		1
R505	PQ4R10XF1002	10K	S	1
R506	PQ4R10XF1502	15K	S	1
R508	ERJ6GEYJ475	47		1
		(CAPACITORS)		
C501	ECEV1CA470	47		1
C503	ECEV1CA470	47		1
		CABINET AND ELECTRICAL PARTS		
100	PQKF10078Z1	CABINET PLATE		1
101	PQKM10105Z1	CABINET BODY		1
102	PQJT10052Z	BATTERY TERMINAL		1
103	PQJT10053Z	BATTERY TERMINAL		1
104	PQJT10054Z	BATTERY TERMINAL		1
105	PQJT10055Z	BATTERY TERMINAL		1
106	PQJT10056Z	BATTERY TERMINAL		3
107	PQGT11539Z	NAME PLATE		1
108	PQBV10001Z	SCREW		1
109	PQHG10158Z	PACKING		1
110	PQHG10159Z	PACKING		1
111	PQHG10160Z	PACKING		1
112	PQHG10216Z	PACKING		1
113	PQMB10003Z	GUIDE		1
114	XTB26+8J	SCREW		2
115	XUC2FY	RETAINING RING		1
116	PQJT10061Z	BATTERY TERMINAL		1

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